

EA-1001; Environmental Assessment and (FONSI) for Commercialization of the Mound Plant

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EA-1001; Environmental Assessment and (FONSI) for Commercialization of the Mound Plant

DOE/EA-1001

Environmental Assessment for Commercialization of the
Mound Plant

Prepared By:
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1. Purpose and Need for Agency Action

On September 14, 1993, the U.S. Department of Energy (DOE) issued the Finding of No Significant Impact (FONSI) on the Proposed Action to consolidate certain nonnuclear component manufacturing operations of the Nation's Nuclear Weapons Complex. The direct consequences of the Proposed Action presented in the Nonnuclear Consolidation Environmental Assessment (EA) is the close-out of Nuclear Weapons Complex defense missions at the Mound Plant (Ref 1 and 2). DOE decided on December 23, 1991 to phase out the Mound Plant and transition the Plant to the Office of Environmental Restoration and Waste Management (EM), with the goal of releasing the site for commercial use (Ref 2).

The DOE Miamisburg Area Office (MB) seeks to fulfill the Secretary's Economic Development Initiative to commercialize surplus facilities such as the Mound Plant. The goal of the Secretary's Economic Development Initiative is to make DOE resources available to community partnerships for local business development that supports the President's broader objective of stimulated economic growth, (Ref 3 and Ref 4). This Economic Development Initiative established clear objectives concerning future use of surplus DOE Facilities. DOE/MB's strategy for implementing the Secretary's initiative identified the following key objectives:

- 1) To mitigate the potential adverse impacts resulting from displacement of Mound Plant employees and subcontractors.
- 2) To minimize the impact of defense downsizing on the local economy.
- 3) To transfer technologies that have been developed at the Mound Plant to the private sector.
- 4) To utilize the plant facilities for constructive purposes to retain the value of DOE's investment.

To address this situation, the local Miamisburg communities and community organizations formed the Mound Reuse Committee (MRC), which now includes representation from all stakeholders, including public, private, and employee interests. This organization is the recognized Community Reuse Organization

(CRO) and focuses on defining the common concerns of the members. An additional stakeholder organization represented by a partnership of the City of Miamisburg, Department of Energy (DOE), and EG&G Mound Applied Technologies formulated a unified plan of action to address concerns through the development of the "Mound Plant Future Use Plan," dated December 21, 1993 (Ref. 5). Both organizations identified the Miamisburg Mound Community Improvement Corporation (MMCIC) as the distinct private entity to coordinate administrative function for the City of Miamisburg while implementing the Future Use Plan. The Plan identifies the challenges, needs, and opportunities associated with closing out the defense mission at the plant and describes a comprehensive strategy designed to mitigate the impact of plant closure on the community. The Plan allows the facility to preserve the economic viability of the communities who contributed to the DOE's Nuclear Weapons Program. Mound has a unique history of accomplishment and diversity that set it apart as a scientific organization. It was not just a production site, but rather a research and development site that was integrated with component production (Ref 6). The DOE recognizes that the true value of the facility is not limited to site property and its physical structure, but resides in the personnel, their technology-based skills and experience, and the quality of the equipment and products that have been developed at the Mound Plant.

One objective of the MRC is to redirect the facility's advanced manufacturing capabilities for defense production to the private sector. The broad concept is to transform the Mound Plant into an advanced manufacturing center with the main focus on commercializing products, process development, and identifying other firms interested in commercializing products such as flexible printed circuits, explosive components, ceramic components, and other technology such as nondestructive evaluation and analysis of materials. (Ref. 5).

2. Proposed Action and Alternatives

2.1 Proposed Action - Mixed-Use Commercialization of the Mound Plant

The Proposed Action is to lease portions of the Mound Plant to commercial enterprises, excluding land associated with the south property (see Figure 2-1 for location of the south property) since it may be sold rather than leased. Leasing would be between the DOE and a lessee including, but not limited to, MMCIC. MMCIC would, in turn, administer its lease with DOE, and sublet parcels of the plant to other potential business enterprises for commercial uses consistent with the "Mound Plant Future Use Plan." MMCIC would present any proposals from potential subleases to DOE for approval in accordance with DOE/OFO Economic Development, OH-5.5.01 prior to any subleases taking effect. Key elements of the Mound Commercialization effort include, but are not limited to, the following goals:

- Maintain core instrumentation and equipment resources during the transition period. The transition would be implemented in several phases over a period of five years. This would allow the Mound Plant to continue to contribute to the nation's leadership role in high technology in the future.
- Attract one or more technology-based anchor tenants to provide immediate job opportunities for displaced workers, and to provide additional revenue to help support overhead costs associated with the Mound Plant transition.
- Develop Small Business Incubator tenants to foster the growth of small and medium sized entrepreneurial technology-based businesses.

The Future Use Plan presents a combination of uses similar to ongoing activities, processes, and operations new to the plant that would represent a governmental presence and a vibrant private industry technology partnership, working in concert to promote energy, environment, manufacturing, science and technological competitiveness for the commercial marketplace (Ref. 5). Proposed uses may also include the continued manufacturing of flexible printed circuits, explosive components, and ceramic components. The general design and manufacturing processes for these product lines would be very similar or identical to those processes used in the manufacture of existing products. Proposed processes and operations may also include operations that are not currently conducted at Mound Plant, such as environmentally acceptable printed circuit board fabrication processes. Proposed processes and operations not currently conducted at the Mound Plant may be similar to those analyzed in the

Mound Plant Alternative described in Section 3.1.2.1 of the Nonnuclear Consolidation EA (Ref. 1) and their impacts would be bounded by that analysis.

In addition to the ongoing activities at Mound Plant, the Mound Plant Alternative in the Nonnuclear Consolidation EA would have consolidated the nonnuclear functions at Mound Plant from other DOE sites to include: 1) nonnuclear electrical/mechanical manufacturing functions would be transferred from the Kansas City, Pinellas, and Rocky Flats Plant, 2) lithium ambient batteries would be transferred from Los Alamos National Laboratory (LANL), and 3) special products, such as nuclear grade steels, safe secure trailers, weapons trainer shop, and metrology capabilities would be transferred from the Rocky Flats Plant. Any new construction required by proposed uses (except as described below) is outside the scope of the Mound Plant Alternative in the Nonnuclear Consolidation EA and is outside the scope of the Proposed Action in this EA. Any new construction at the Mound Plant would be subject to additional National Environmental Policy Act (NEPA) review. Leases or subleases for any uses not similar to those outlined in the Mound Plant Alternative of the Nonnuclear Consolidation EA or similar to past operations would be subject to additional NEPA review before DOE's approval of the lease or sublease.

Figure 2-1: Mound Plant Site

All leases issued as part of the Proposed Action would clearly define the DOE and tenant responsibilities with respect to compliance with all Federal, State, and local requirements. All leases would contain restrictive lease conditions to ensure compliance with regulatory requirements and to ensure that the proposed uses are within the bounds of this EA. Certain restrictive conditions imposed by regulatory permits, such as Mound Plant's air emissions, wastewater, and hazardous waste permits are already identified. Requirements for additional restrictive conditions would be evaluated, as needed. The existing environmental conditions of the proposed plant lease space would be certified by DOE prior to leasing to the prospective tenant, (DOE/OH) Economic Development, OH-5.5.01). The National Defense Authorization Act for Fiscal Year 1994 requires consultation with and concurrence from the United States Environmental Protection Agency (USEPA) in determining whether the environmental conditions of DOE property and the terms and conditions of the lease agreement are consistent with safety and the protection of public health and the environment prior to entering into a leasing agreement. Appendix A provides an example of the generic leasing agreement and a letter from the USEPA concurring with the use of the general purpose lease agreement. No adverse impacts are expected from any cleanup required in order to make building certifications pursuant to the Appendix A of the general lease. The level of cleanup will vary based on prospective uses and contractual requirements.

Commercialization at Mound will be implemented in a phased approach following a process which establishes the roles and responsibilities of the MMCIC, DOE-OH, DOE-MB and EG&G Mound Applied Technologies. Figure 2-2 is an economic development flow sheet that outlines the roles of the organizations noted above.

During each phase the MMCIC, would review proposals from commercial entities that want to utilize the site and would recommend tenants to DOE for occupancy based on their suitability to site requirements. The leases would include legally binding agreements between the lessor and the tenants regarding issues, such as payment of utilities costs, compliance with environmental regulations, and security at the facility. Activities and processes planned by tentative lessees would require oversight review by the MMCIC, or its equivalent, to assist DOE in determining the need for additional NEPA review. DOE would conduct additional NEPA reviews as necessary.

All leasing activities would be coordinated through the MMCIC. It is expected that the DOE or its representative would initially maintain common-use areas such as the utilities, wastewater treatment system, and waste storage areas.

Depending on specific tenant requirements, activities associated with commercialization may include equipment and plant layout rearrangements, renovation activities, and other routine maintenance activities or replacements and upgrades consistent with facilitating the conversion of the Mound Plant buildings identified in Chapter 3 of this EA to the extent necessary to facilitate commercial use. These preparation activities would be consistent with those activities that DOE has determined do not individually or cumulatively have a significant effect on the human environment (10 CFR 1021.410 and Appendices B1.3, B1.4, B1.7, B1.21, B1.22, B2.1-2.5, B4.6, B4.7, B4.11, B5.1, B6.3-6.6, and B6.8 of 10 CFR 1021).

Optionally, DOE might only allow limited scale activities that involve new manufacturing and new research processes; these processes would be screened per DOE-OH Economic Development, OH-5.5.01 prior to introduction onto the

Mound Plant site. The Proposed Action would allow for additional employment at the facility of up to 1,500 workers in addition to the anticipated 1,100 workers for ongoing operations associated with environmental restoration and Nuclear Energy (NE) Radioisotopic Thermoelectric Generator (RTG) missions.

[Figure 2-2: Economic Development Roles & Responsibilities](#)

[Figure 2-2: Economic Development Roles & Responsibilities \(Continued\)](#)

2.2 Alternative 1 - Commercialization Restricted to Existing Plant Capabilities and Uses

The primary alternative to the Proposed Action would be leasing portions of the Mound Plant to commercial enterprises engaged in processes and activities similar to those processes and activities currently performed at the plant. These processes and operations are described in Section 3.2.2 of the Nonnuclear Consolidation EA, (Ref. 1) and Section 3 of this EA. This would be achieved through the lessee arrangement described for the Proposed Action above. The lessee would be the MMCIC. All arrangements for commercial use of the facilities would be limited strictly to commercial enterprises which are purely administrative or engage in essentially similar activities in scope and scale to those currently in existence. This alternative would not introduce any new environmental impacts that exceed the operating envelopes established in the numerous Mound Plant environmental permits. Such permits include the plant's air and water permits as discussed in the Mound Site Environmental Monitoring Report for Calendar Year 1993, August 1994 (Ref 7).

The primary difference between this alternative and the Proposed Action is that this alternative would not allow leasing space for operations that differ substantially from ongoing operations. This alternative would have the potential to generate up to 200 jobs at the facility. This number is considerably lower than the employment estimate for the Proposed Action because there is limited demand for commercial activities that consist only of those currently being conducted at the site.

2.3 No Action Alternative

In this alternative, no attempts would be made to open up the Mound Plant for the local business community. Current research, development, and manufacturing activities would cease in 1995, and the Mound Plant would be transferred to the Department of Energy's Office of Environmental Restoration and Waste Management (EM) for future administration. All plant facilities and equipment would be brought to safe shutdown and/or removed for an undetermined future use or surplus. Decontamination and Decommissioning (D&D) of contaminated facilities would be a continuing activity which originated in the DOE Surplus Facilities Management Program. As chemically and/or radiologically contaminated facilities are determined to be surplus to the needs of the DOE, the facilities are placed under a surveillance and maintenance plan included in the D&D program. Mound D&D activities are performed in accordance with the technical, cost, and schedule baselines maintained for the D&D program and reflected in the Activity Data Sheets prepared and reviewed annually as part of the DOE budget and planning process and DOE Order 5820.2A. As discussed in Section 4.4 of the Nonnuclear Consolidation EA, additional NEPA review would be performed as the nature of the specific D&D project activities are identified (Ref. 1).

This action would not provide employment opportunities or otherwise stimulate the local economy. Ongoing activities at the plant would be limited to maintenance of buildings and essential utilities, environmental restoration activities, and security for grounds and buildings. Personnel requirements would be limited to 900 workers for environmental restoration and 200 workers for ongoing Nuclear Energy RTG missions. Implementation of this alternative would have considerable economic impacts to the community. Long-term environmental impacts of this alternative would include an overall decrease in emissions from the plant.

2.4 Alternatives Considered but Dismissed as Unreasonable

Three additional alternatives were considered but were dismissed as unreasonable because they fail to meet the four tenets of the Economic Development Initiative identified in Section 1.0, Purpose and Need for Agency Action. The first of these alternatives would be to sell the plant and all

associated physical structures upon completion of environmental restoration activities. The second alternative considered and also deemed unreasonable would be to demolish the plant and all associated physical structures.. It has been estimated that the cost associated with cleaning up all Mound Plant facilities for subsequent sale of the real estate would be 1.1 billion dollars. The costs associated with completely demolishing the facilities would cost approximately an additional 300 million dollars. The costs associated with completing work on the Mound Plant Operable Units (see section 3.1) has been estimated to cost approximately 300 million dollars. Therefore, the additional environmental restoration costs associated with the above two alternatives would result in considerable additional costs above those identified for the Proposed Action, Alternative 1, and the No Action Alternatives These alternatives would also fail to provide sustained employment opportunities to the community. The third alternative is to continue DOE or other government-funded operations (such as Department of Defense) at the Mound Plant. This alternative was dismissed as unreasonable because it is not consistent with DOE's desire to consolidate and streamline operations as described in the Nonnuclear Consolidation EA (Ref. 1) and does not support commercialization of facilities. The above three alternatives would fail to achieve the Secretary's goals of the Economic Development Initiative.

3. Affected Environment and Environmental Consequences of the Proposed Action and Alternatives

Resources discussed in this chapter are limited to those which may be affected by the Proposed Action and alternatives. The resources listed below are discussed in brief, but are not analyzed in detail in this environmental assessment:

- Agricultural and Recreational Areas
- Wild and Scenic Rivers
- Transportation
- Noise
- Archaeological
- Wetlands and Floodplains

The region surrounding the Mound plant is predominantly agricultural, used for growing corn and soybeans. Prime and unique farmlands are not located at the Mound Plant. The proposed action and alternatives do not require use of additional land other than that already encompassed by the current site boundaries and therefore no impact to adjacent agricultural areas would occur. The Mound plant does not contain any recreational resources on its property, however, across the road is a city owned golf course and an Indian Burial Mound: Past and present plant operations at the Mound Facility have had and continue to have minor traffic and noise impacts on these areas. The proposed action has the potential to result in an increase of employment level up to historic employment highs at the Mound site, (Approximately 2,600, employees, 1984). Therefore, the proposed action and alternatives would not be expected to result in any additional impacts to these publicly utilized areas above those which currently exist, or have existed in the past. There are no wild and scenic rivers located in the vicinity of the Mound plant, (Letter, Lewis 1992: see Appendix B). In 1987 Wright State University conducted a field survey and examination of the Mound facility and it appeared that there were no significant archaeological remains on the Mound Plant site due to previous disturbance. No archaeological sites eligible for the National Register will be affected, (Letter, Kitchen 1992: see Appendix B). A small portion of the south property, (see Figure 3-1) falls within the 100 year flood plain of the Great Miami River. The south property is outside the scope of this environmental assessment, therefore, the proposed action will not be impacted. A wetlands investigation was initiated in response to terms set forth in the Federal Facilities Agreement (FFA) with DOE, U.S. EPA and Ohio EPA. The results of the wetlands assessment indicate that the Mound site does contain small areas onsite that meet the Army Corps of Engineers and EPA definition of wetlands, (Ref 8). These areas will not be disturbed by any activities involved with the proposed action or any of the alternatives.

As noted above, it has been estimated that the proposed action discussed in this Environmental Assessment has the potential to generate up to 1,500 jobs in addition to the estimated 1,100 employees needed to support proposed future programs. Total employment at the site is therefore not expected to increase

above the past maximum employment levels. Therefore the impacts of the proposed action and alternatives discussed in this EA are not expected to result in any additional traffic and noise impacts above those which currently exist, or have existed in the past.

Description of the Mound Plant Site

The Mound Plant is located on 123 hectares (306 acres) in Montgomery County, Ohio, partially within the Miamisburg city limits (population 17,770) and 0.8 km (0.5 mi) east of the Great Miami River. The plant is 16 km (10 mi) south-southwest of Dayton and 80 km (31 mi) north-northeast of Cincinnati (Figure 3-1). Approximately 76,000 people live within an 8-km (5-mi) radius of the site.

The Mound Plant lies on high bedrock bluffs overlooking the city of Miamisburg, the Great Miami River, and the river plain to the west. The plant incorporates two high hills divided by a minor northeast-to-southwest-trending valley that feeds into the Great Miami River. Most of the buildings on the plant site occupy the northwest hill crest (Main Hill). A smaller group of buildings lies in the valley and on the valley slopes. Other buildings occupy the southeastern SM-PP Hill, (Figure 2-1).

The Mound Plant is owned by the DOE. It is operated by EG&G Mound Applied Technologies as a prime contractor for the DOE. Mound has been operating since 1948. The facility has been part of the nuclear weapons production administered by the DOE Albuquerque Operations Office. The plant was originally built to manufacture nonnuclear components for nuclear weapons assembled at other DOE sites. Production of these devices necessitated the development of several uniquely specialized areas of competence and supporting facilities. These capabilities led to the assignment of other weapons application products. There are currently 158 buildings and facilities at Mound. Total floor area at Mound is approximately 1.4 million square feet (Ref. 9). The workforce at Mound in September 1994 was approximately 1350 employees. In addition to manufacturing, production development capability is maintained at the Mound Plant. Mound's primary historical missions have been: Operations Scheduled to Continue (estimated to require 1,100 workers)

- Design and production of calorimeters
- Stable isotope separation and sales
- Isotope heat source piece part fabrication
- Radioisotopic Thermoelectric Generator (RTG) heat source fabrication and qualification
- Commercial Tritium sales/inertial confinement fusion target loading.
- Tritiated aqueous Waste recovery
- Nuclear materials safeguards
- Pollution prevention
- Waste management
- Storage of nuclear materials
- Maintenance of standards and calibration facility
- Decontamination and Decommissioning
- Environmental Restoration (CERCLA)

Figure 3-1: Southwestern Ohio and Location of Mound Plant

Operations Scheduled to End (Ref 10)

- Fabrication, assembly, and procurement of:
 - Detonators, firesets, and pyrotechnic devices.
 - Flexible circuits
 - Explosively Actuated timers
- Powder and thermite processing
- Explosive and reservoir surveillance testing
- Savannah River Operations Operational Capability Contingency

- Solid storage transfer systems
- Performance of surveillance activities to ensure reliability of nuclear stockpile
- Maintenance of process capability program
- Development of production engineering support

The majority of the work done at Mound has been done for Defense Programs (DP). As a result of the November 22, 1993 Department of Energy decision to phase out the Mound Plant and transition the Plant to the Office of Environmental Restoration and Waste Management (EM), Mound is currently in the process of phasing out the DP mission (Ref 2). The site will be transferred to EM for environmental cleanup under the provisions of a Federal Facility Agreement (FFA) entered into with the EPA and the sale under section 120 of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA). A substantial infrastructure will remain to support environmental cleanup activities conducted by DOE EM.

Non-DP activities would continue to receive support related to security, non-destructive testing, waste disposal and management, public relations, finance, plant engineering and environmental health and safety programs. Lessees have the option to receive support for maintenance activities.

The types of hazards identified at the Mound Plant include energy sources, such as electrical, explosive, kinetic, lasers, and high pressure, non radioactive hazardous materials, like flammable materials, reactive materials, acids, toxic materials, cryogenic gases, plating solutions, and radioactive materials. Solid, liquid, and gaseous wastes, both radioactive and non radioactive, generated at the site are stringently controlled. This is accomplished by a variety of treatment, control, and monitoring systems.

The plant buildings and their functions are listed in Table 3-1. Figure 3-2 is a site map showing facilities available for lease.

[Figure 3-2: Site Mound with Facility Locations](#)

Table 3-1. Mound Plant Building Summary

Building	Function	Square Feet
A	Administration/quality	55,582
B	Inert production	27,735
C	Record Storage	13,403
COS	Development/production	64,654
DS	Development/standards/testing	47,810
Eb	Analytical services/production/analytical laboratory	47,755
EG1	Emergency generators	240
EG2	Emergency generators	240
EG4	Emergency generators	148
EG6	Emergency generators	240
EG7	Emergency generators	80
G	Garage	7,518
GH	Human Resources	5,347
GP44	Record Storage	365
GIS	Guard island entrance	166
GP1	Change Rooms/firing range	7,792
GW	Bonded stores/receiving inspection	9,782
H	Environmental laboratories/laundry/change rooms	17,334
HH	Isotope separation	15,276
I	Explosives/pyrotechnics production	25,736
M	Tooling fabrication/Ceramics machining/Electroplating/ electronics	56,018
OSE	Engineering/DOE/cafe/auditorium/computer facility	90,072
OSW	Accounting/management information/drafting/central computer facility	54,280
PH	Storage	646
P	Powerhouse - [steam/chilled water/compressed air/breathing air]	15,143
PS	Paint shop	2,288
R	Nuclear laboratories/offices/library/D&D program	55,003
SD	D&D program	1,593
SM	D&D program	21,700
SST	Salt storage for road treatment	590
SW	Tritium development/surveillance	43,066

T	Nuclear operations/tritium development/laboratories/health physics	172,963
W	Maintenance	32,484
WD	Radioactive waste treatment	16,216
WH1	Well house	374
WH2	Well house	374
WH3	Well house	128
1	Explosives processing	986
2	Test fire	6,291
3	Test fire	12,391
5	Magazine	314
6	Magazine	90
7	Magazine	387
8	Magazine	66
10	Magazine	66
11	Magazine	372
13	Firing shed	47
14	Metal melting	53
16	Production storage	480
17	Production storage	1,120
19	Property management/surplus/property disposal	4,480
20b	Magazine	303
21	D&D program	4,069
22	Development/warehousing	9,090
23	Waste material staging area	3,422
24	Water treatment (potable)	840
25	Weather station	430
26	Maintenance	800
27	Energetic materials production	5,285
28	Ceramics production	11,329
29	Plastics production	6,601
30	Health Physics	740
31	TRU waste staging	8,740
33	D&D operations	1,344
34	Emergency brigade training	1,110
35	Non-Destructive Testing (NDT) Laboratory	2,500
36	Support functions for RTG assembly and testing operations	4,255
37	Organic Materials Development	2,463
38	Nuclear programs/D&D program	44,327
39	Engineering	3,515
40	Print shop/technical manuals/publications	12,227
42	Pyrotechnics production	2,892
43	Development	1,516
44	Cafeteria	2,480
45	Health Physics	9,500
46	Welding development	2,439
47	Security	3,611
48	Surveillance	7,950
49	Timer fabrication	14,929
50	RTG assembly and testing	14,849
51	Development	3,541
52	Magazine	78
53	Magazine	239
54	Magazine	331
55	Waste management	330
56	Fire pump and water tank	613
57	Sanitary sewage treatment	510
58	Filter bank	6,110
59	Neutron radiography	668
60	Ceramics	3,958
61	Warehousing/procurement/contracting	45,490
63	Quality/product tester/design/development	16,461
64	Magazine	72
65	Production	2,400
66	Development	600
67	Energetic material support	3,787
68	D&D staging area	1,990
69	Production/Tritium Surveillance	1,620
70	Quality	3,366
71	Flammable liquids storage	800
72	Hazardous waste staging	2,400
73	Gas cylinder storage	2,200
74	Production storage	400
79	Waste Management Support	1,650
80	Magazine	314
81	Magazine	314
82	Magazine	314
83	Magazine	314
84	Magazine	314
85	Powder blending/processing	3,160

87	Destructive testing	38,882
88	Support functions for RTG assembly and testing operations	7,200
89	Detonator (Long term surveillance)	4,830
90	Retort (explosives waste)	656
91	Environmental, Safety & Health/training	8,065
92	Production training	1,600
93	Standards	2,936
94	Materials compatibility	1,240
95	Utilities operations	2,000
96	Disintegrator/storage	432
98	Fire Station	8,517
99	Security operations	11,412
100	Security	6,292
101	Engineering	1,815
102	Engineering (D&D)	10,982
104	Test Fire maintenance	1,800
105	Production machining	38,027
106	Production storage	180
112	Sand filters	785
113	Dewatering	547
114	Nitrogen separation	432
120	Health Physics storage	350
122	Hazardous Waste Storage Facility	15,000

(Taken From the Mound Plant Construction Plan, 1993)
See Figure 3-2 for Facilities Available for Lease.

3.1 Environmental Restoration

Affected Environment

In compliance with the Comprehensive Environmental Compensation and Liability Act (CERCLA) and the Federal Facilities Agreement (FFA) signed by DOE, USEPA and Ohio EPA, the Mound Plant has undertaken environmental restoration (ER) activities to clean up contamination at the site. The Mound site had nine operable units (OU's) which have since been consolidated into six OU's that are being investigated at the Mound Plant. Figure 3-3 shows the locations of the six operable units. The following is a brief description of each OU at the Mound Plant.

Operable Unit 1, Area B

Addresses possible chemical and radioactive contamination of the portion of the Buried Valley Aquifer (BVA) which underlies the southwest corner of the original Mound plant. The main concern in OU 1 is volatile organic compounds (VOCs) migrating in groundwater. Crushed empty thorium drums and waste from cleaning filters in Mound's Waste Disposal Building are also included in OU 1.

Operable Unit 2, Main Hill

Addresses the source and pathways of possible groundwater contaminants on Mound's Main Hill. Historical Tritium releases have been tracked since the 1970's; the extent of VOC contamination is uncertain. Off-site groundwater seeps on Mound's north hillside are also included in OU 2.

Operable Unit 4, Miami Erie Canal

Addresses contamination of the old Miami-Erie canal bed in Miamisburg resulting from plant runoff, including an accidental plutonium spill in 1969. Tritium is also a contaminant of concern in the canal.

[Figure 3-3](#)

Operable Unit 5, South Property

Addresses on-site soil areas in the southern portions of Mound Plant known or suspected of being contaminated with radionuclides or chemicals. OU 5 will fully characterize the sources of contamination and migration within its geographical boundaries. Available data indicate that most of OU 5 is uncontaminated. However a number of areas within OU 5 are known to be contaminated with radioactive materials, principally thorium and plutonium. The areas were contaminated by disposal of contaminated soil or debris.

Operable Unit 6, Verification of Sites Under the Management of the Decontamination & Decommissioning Program

Addresses residual contaminants from Mound's ongoing D&D of unusual radiological facilities on-site. The current D&D program at Mound began in 1978 and presently addresses surplus plutonium facilities and underground waste pipelines. The D&D program is independent of the CERCLA Program and is not routinely subjected to EPA oversight. However upon completion of D&D activities, every site will be evaluated by the CERCLA Program under OU 6.

Operable Unit 9, Site-Wide/Off-Site

Addresses the total environmental effects of contamination attributed to Mound plant that may be found in the air, groundwater, soils, surface water and sediments: includes all ecological concerns. OU 9 encompasses the cumulative impact of all other Operable Units on-site and in the off-site environment, including characterization of possible contamination in the Buried Valley Aquifer and the Plant drainage system. Presently, site-wide investigations encompass the entire plant and the area within a 20-mile radius of the plant.

Impacts of the Proposed Action, Alternative 1, and the No Action Alternative

The Proposed Action, Alternative 1, and the No Action Alternative would be consistent with and would not impact ongoing environmental restoration activities at the Mound Plant. The environmental restoration activities are conducted per the FFA and would proceed independently of commercialization activities under the oversight of the U.S. and State EPA's.

3.2 Socioeconomics

Affected Environment

The discussion of socioeconomics of Mound is based on a Region of Interest (ROI) where 88% of Mound's employees lived in 1991. The ROI includes Butler (9%), Montgomery (65%) and Warren (14%) counties in Ohio. Mound is located within the city limits of the city of Miamisburg where light industry, office complexes and residential areas are located near the plant. 1990 census data show the population estimates for the ROI of 979,197. Table E3.6-1b of the Nonnuclear Consolidation Environmental Assessment of 1993 shows the regional growth pattern estimates at the Mound plant from 1970 through 2040, (Ref 1, Table E3.6-1b)), (see Appendix D).

The Mound Plant currently employs over 1,300 employees. The average annual income with benefits included is approximately \$80,000 per year. More than 1,700 indirect (community employees) are needed to support operations and associated spending from the Mound Plant and its employees. Direct payroll at Mound was estimated to be more than \$48.4 million .(personal communication with Mr. Thomas Hughes, Manager EG&G Mound Applied Technologies (Ref 11).

The City of Miamisburg had total tax collections of \$7.5 million in 1992 of which \$1.6 million (approximately 21% of the total) was contributed by Mound employees. Mound employees have consistently played an important role in community affairs with individuals involved in educational outreach programs at local schools, and other important community needs.

Impacts of the Proposed Action

The impacts of the Proposed Action would be the potential for producing up to 1500 jobs at the Mound Plant within ten years of implementation. In terms of socioeconomic impacts, the Proposed Action would achieve the Secretary's initiative to commercialize Mound Plant facilities and meet the following objectives of DOE and MRC: 1) create high-caliber job opportunities, 2) stimulate local economic growth, 3) promote the commercialization of site-developed technology, and 4) reuse Department facilities compatibly with the continuing mission (Ref. 6). The Proposed Action would maximize the DOE's past investment in the facility, and in its human and technology resources. At a minimum, the Proposed Action would preserve the current economic viability of the employees, local suppliers, and the community that have served the nation's defense needs for the past 47 years in the Mound Plant area.

The Proposed Action is the alternative that is most consistent with the MRC's critical requirement that the facility succeed in attracting a major large high-technology anchor tenant to the site. In addition to providing continued job opportunities in the area, it would continue the Mound Plant's role in fueling the growth of technology and manufacturing firms in the area. Additionally the educational outreach programs supported by Mound's technical staff would continue to benefit the local school systems. The Proposed Action would result in the least severe adverse economic impact on the community due to cessation of the Defense Programs mission at the plant. Depending on the number of similar high-technology firms attracted to the area by the favorable commercialization activities at the Mound Plant, the positive socioeconomic benefits to the community presented by the Proposed Action may actually exceed the positive impacts resulting from ongoing activities at the plant. Through leasing procedures, activities at the Mound Plant would be conducted to ensure that leasing activities do not have the effect of excluding persons (including populations) from participation in, denying persons (including populations) the benefits of, or subjecting persons (including populations) to discrimination under the economic development activities at the Mound Plant because of their race, color, or national origin. The DOE is committed to the

EPA's policy regarding environmental equity issues. Environmental equity refers to the distribution of environmental risks across population groups. The DOE will evaluate, in NEPA documents, the impact of departmental actions on racial minority and low-income populations to insure that these groups are not bearing a disproportionate share of environmental risk. The proposed action and alternatives discussed in this EA will take place within the city limits of Miamisburg, Ohio. Racial minority and low income families do reside in the Miamisburg community, however, Miamisburg is not a racial minority or low income community. The proposed action and alternatives will therefore not have any unique affects on these groups, (Ref 12).

Impacts of Alternative 1

The impacts from Alternative 1 would be the potential for creating up to 200 jobs at the Mound Plant. The corresponding benefit to the community would be valued at considerably less than that of the proposed action.

Impacts of the No Action Alternative

The impacts from the No Action Alternative would be the potential for retaining approximately 900 jobs at the Mound Plant in support of environmental restoration program work and Nuclear Energy (NE) Radioisotopic Thermoelectric Generator (RTG) heat source program work. The no action alternative would result in some displacement of households, businesses, and support contractors. In addition, it would have the effect of stifling the potential for the economic growth of the community that would result from productive use of Mound Plant facilities.

3.3 Air Emissions

3.3.1 Non radiological Air Emissions

Affected Environment

Mound is located within the Metropolitan Dayton Intrastate Air Quality Control Region (AQCR). The region is under the authority of the Regional Air Pollution Control Agency (RAPCA), which conducts a program to monitor ambient levels of criteria pollutants. This AQCR is designated as attainment by the Environmental Protection Agency (EPA) with respect to SO_x, NO_x, and CO (40 CFR 81.336). However, several counties within the AQCR, have been classified as non attainment for Total Suspended Particulate (TSP) and ozone (O₃). The Ohio EPA has standards for existing pollutants regulated by National Emission Standards for Hazardous Air Pollutants (NESHAP). Ambient air quality near Mound is monitored by the RAPCA monitoring program and that of the Southwestern Ohio Air Pollution Control Agency. The principal sources of criteria air pollutants at Mound are the two boilers associated with the steam plant. Other sources include fugitive particulates from process emissions, emissions from laboratory operations, and vehicular emissions. Table 3-2 summarizes the criteria pollutants emissions from the Mound plant for calendar year 1993. This information in this table was obtained from the Mound Air Emissions Inventory for Calendar Year 1993

Table 3-2 Criteria Pollutants Emissions for the Mound Plant for 1993

Source	TSP a (lbs/yr)	SO _x (lbs/yr)	NO _x (lbs/yr)	VOC's b (lbs/yr)	CO (lbs/yr)	Lead (lbs/yr)
Internal Combustion Engines	1304	1254	20678	9055	250,000	NA
Gasoline Dispensing Stations	NA	NA	NA	628.6	NA	NA
Energetic Material Disposal	39.5	0.0	0.4	0.0	441	0.0
Paint Spray	NA	NA	NA	587	NA	NA
Power House	4111	243	42014	174.7	10,503	NA
Underground Storage Tanks	NA	NA	NA	0.2	NA	NA
Roadways and Parking Lots	17,808	NA	NA	NA	NA	NA
Miscellaneous Particulates	138.2	NA	NA	NA	NA	NA
Miscellaneous VOC's	NA	NA	NA	8529	NA	NA
Total of Pollutant (lbs/yr) (a)	22096	243	42,0142	9919	10944	0
Total of Pollutant (tons/yr) (a)	11.0	0.12	21	4.95	5.47	0
Major Emitter Threshold Limit (tons/yr) (b)	100	250	100	100	250	0.6
Percent of Threshold Limit	11.0	0.04	21	4.95	2.18	0

a excluding mobile emission sources contained in internal combustion engine source

b Clean Air Act Sec 112, Ohio Administrative Code 3745-77-01 (w)

As of July 1994, the Ohio EPA has not promulgated standards for the

additional 189 Hazardous Air Pollutants (HAPs) specified in the Clean Air Act (CAA). However, the Ohio EPA uses the American Conference of Governmental Industrial Hygienists (ACGIH) list of pollutant Threshold Limit Value (TLV). The HAPs/toxics described in this section are those currently used at Mound or those anticipated to be used under the proposed action. Hazardous Air pollutants (HAPs) are regulated under NESHAPS. HAP/toxic emissions from Mound are derived based on detailed documented process knowledge from air permits and/or applications filed with the Ohio EPA. The emission inventories for Mound HAPs are presented in Table 3-3.

Table 3-3 Hazardous Air Pollutants (HAP's) for the Mound Plant in 1993

Chemical (HAP)	Estimated Emission (lbs/yr) (a)
Acetonitrile	0.61
Acrylonitrile	12.6
Asbestos	7.88
Benzene	24.98
Carbon Disulfide	9.68
Carbon Tetrachloride	0.02
Chlorine	0.96
Chlorobenzene	0.19
Chloroform	6.24
Cumene	0.58
Dichlorobenzene	11.52
Diethanolamine	0.05
Dimethyl Formamide	25.85
Dioxane	28.23
Epichlorohydrin	30.10
Ethylene Glycol	1.04
Hexane	545.88
Hydrochloric Acid	774.58
Hydrofluoric Acid	17.42
Methanol	2383.17
Methyl Isobutyl ketone	38.4
Methylene Chloride	13,690
Phosphine	0.0
Polychlorinated Biphenyls	96
Tetrachloroethylene	1.92
Toluene	37.11
Toluene diisocyanate	54
Trichloroethane	1,820
Trichloroethylene	44.74
Xylene	194.08
Arsenic Compounds	8.74
Cadmium Compounds	0.19
Chromium Compounds	8.98
Cyanide Compounds	26.28
Lead Compounds	9.30
Mercury Compounds	0.58
Nickel Compounds	166.82

Total HAPs (lbs/yr) (c)	20,078.72
Total HAPs Threshold Limit (b)	50,000
Total HAPs Percent of Threshold (%)	40.1%

Maximum Individual HAP (lbs/yr)	13,690
Maximum Individual HAP, Threshold Limit (b)	20,000
Maximum Individual HAP, Percent of Threshold (%)	68.4%

- a quantity released is based upon documented process knowledge from air permits and/or applications filed with the Ohio EPA.
- b The Threshold Limits for regulation as a major source are:
 > 50,000 lbs/yr (25 tons/yr) of combination of HAPs
 > 20,000 lbs/yr (10 tons/yr) of any single HAP
 (Clean Air Act, Sect 112; Ohio Administrative Code 3745-77-01 (w))
- c excluding radionuclides

Impacts of the Proposed Action

Tenants will be required to obtain and comply in all respects with regulatory agency permits, regarding air emissions, during the term of the lease. Processes that are proposed would be reviewed by MMCIC and DOE with respect to their impacts on air emissions, and DOE would conduct additional NEPA review, if appropriate.

Both the Proposed Action and Alternative 1 may be affected by proposed regulations, such as National Emissions Standards for Hazardous Air Pollutants

(NESHAPS), 40 CFR Part 83, Halogenated Solvent Cleaning Processes, and Clean Air Act (CAA), Section 112g, Title V permitting requirements. Affected processes would be subject to evaluation to ensure that they meet the new requirements.

Potential tenants whose air impact estimates would exceed the baseline emissions estimates provided for the Mound Plant (Tables 3-2 and 3-3, pages 24, 25 & 26) would either be rejected as tenants or would be required to undergo additional DOE NEPA analysis prior to being permitted onsite as a tenant. Because the emissions from the Mound Plant associated with the Proposed Action would be within Ohio EPA standards, no adverse human health effects from the Proposed Action would be anticipated. It is possible that emissions due to specific chemicals brought in to support new processes would be increased beyond baseline emissions (Table 3-2 and 3-3) for those chemicals, but these increases would not be allowed to exceed applicable State regulatory standards or permitted limits.

Conformity and the Proposed Action

The CAA requires Federal actions to conform to any SIP approved or promulgated under Section 110 of the CAA. Montgomery County is presently designated as a moderate non attainment area for ozone. Using conservative assumptions on potential employee commutes and mobile source emission factors, an emissions estimate of cumulative direct and indirect VOC emissions associated with the Proposed Action was determined to be 13.8 tons per year (TPY). The data and calculations are provided in Appendix E. These emissions were comprised of 5 TPY of stationary source permitted emissions representing present baseline conditions (Table 3-2) and 8.8 TPY attributed to cumulative annual employee commutes to and from the Mound Plant. Based on this estimate, a formal determination of conformity is not required at this time Pursuant to the general conformity requirements of 40 CFR Part 51, Subpart W, a formal determination of conformity may be required at a future date should the cumulative effects of the Proposed Action change.

Impacts of Alternative 1

The impacts of Alternative 1 present no effects that would differ from the existing Mound Plant air emissions baseline as provided in Tables 3-2 and 3-3. Since all processes would be administrative in nature or limited to activities similar to ongoing processes, air emissions would not differ, in quantity or characteristics, from current air emissions. It is anticipated that an overall reduction in plant air emissions would result from implementation of this alternative because the type of work being performed would be at a reduced scale from historical operations (prior to 1993). Since the total number of anticipated employees would be less than that associated with the proposed action, the cumulative direct and indirect emissions from the implementation of this alternative would be below those identified in the Proposed Action.

Impacts of the No Action Alternative

The D&D and close-out activities associated with the No Action Alternative are expected to result in an overall long-term reduction in air emissions generated by the Mound Plant (i.e. below those identified in Tables 3-2 and 3-3. Emissions would be reduced as the processes that involve chemicals are discontinued.

3.3.2 Radiological Air Emissions

Affected Environment

Normal operations in 1993 resulted in radionuclide emissions to the air from operations at the Mound Plant. These emissions included 664 curies of tritium, 1.2 x 10⁻⁵ curies of plutonium -238, 4.0 x 10⁻⁸ curies of plutonium-239,240, 6.3 x 10⁻⁸ curies of uranium-233,234 and 5.7 x 10⁻⁸ curies of uranium-238,(Ref 7). Maximum Committed Effective Dose Equivalents (CEDE) were calculated for these radiological air emissions. Table 3-4 summarizes the radiological emissions to the air and the hypothetical consequences of the releases.

Table 3-4 Mound Plant Radiological Air Emissions in 1993

Radionuclide	Activity (curies)	Maximum Committed Effective Dose Equivalent to a Hypothetical Individual in 1993 (mrem) (b)	
Tritium	664 (a)		0.005
Plutonium-238	1.2 x 10E-5		0.13
Plutonium-239,240	4.0 x 10E-8		0.005

Radon-222	1.1	(c)
Uranium-238	$5.7 \times 10E-8$	(c)
Uranium-233,244	$6.3 \times 10E-8$	(c)

- (a) Tritium in air consists of: tritium oxide, 522 Ci and Elemental tritium, 142 Ci
- (b) Hypothetical individual is assumed to remain at the site boundary 24 hours per day throughout 1993. This individual was assumed to have:
 - breathed only air containing the highest average radionuclide concentrations measured at an onsite air sampling station
 - drawn all of his/her drinking water from the offsite well with the highest average concentration, and
 - consumed produce exhibiting the concentrations measured in the samples collected from the Miamisburg area.
- (c) Many tritium, plutonium, and uranium measurements were below their respective reagent blanks or environmental levels and, due to the extremely low levels, it is standard practice not to include measurements at these levels

Maximum Effective Dose Equivalents (EDE) to individuals in the population were calculated for radionuclide air releases using the EPA's computer code CAP-88, (Ref 13). The maximum EDE from airborne releases was 0.04 mrem. The EPA's annual dose limit for airborne releases is 10 mrem. Therefore Mound's releases in 1993 represented 0.4% of the EPA dose standard. CAP-88 was also used to evaluate the population dose from the radiological releases. The population within a radius of 80 km of Mound received an estimated 2.1 person rem from plant operations in 1993. The average collective dose from background sources of ionizing radiation within an 80 km radius of the Mound Plant is approximately one million person rem. A discussion on the methods used to calculate offsite radiation dose is presented in both the Appendix and section 4.7 of the Mound Site Environmental Report for Calendar Year 1993, (Ref 7).

In addition to setting limits on the dose equivalent to any member of the public from Mound operations, DOE has established Derived Concentration Guidelines (DCG) for individual radionuclides. The DCG for a radionuclide is defined as the concentration of that radionuclide in air or water that will give a 50 year CEDE of 100 mrem if taken into the body by inhalation or ingestion. The concentrations of radionuclides from Mound found in all environmental media during 1993 were only small fractions of the DCG's for the respective radionuclides, (Mound Site Environmental Monitoring Report for Calendar Year 1993). The DOE DCG values for individual isotopes (in air) of concern are: DCG Tritium Oxide ($10-12 \text{ uCi/mL}$), DCG plutonium-238 ($10-18 \text{ uCi/mL}$), DCG plutonium-239,240 ($10-18 \text{ uCi/mL}$), DCG Radon-222 (No DOE DCG for Radon-222 exists), DCG uranium 238 ($2 \times 10^{-12} \text{ uCi/mL}$), DCG uranium 233, 234 ($2 \times 10^{-12} \text{ uCi/mL}$)

Impacts of the Proposed Action

No net increases in radiological air emissions over existing emissions (Table 3-4) would be anticipated from the Proposed Action. Radioactive air emissions would be expected to decrease as the DP mission is phased out, (there may be slight increases in radionuclide air emissions due to D&D activities).

Under the conditions of the lease, tenant effluent discharges would be limited to the current plant baseline radionuclide emissions to the air, (Table 3-4). No new radionuclides will be introduced to the site. Potential tenants whose air impact estimates would exceed the baseline emissions estimates provided for the Mound Plant (Tables 3-4) would either be rejected as tenants or would be required to undergo additional DOE NEPA analysis prior to being permitted onsite as a tenant.

Impacts of Alternative 1

The impacts from Alternative 1 on radiological air emissions would be essentially the same as from current Mound Plant emissions (Table 3-4) as documented in the Mound Site Environmental Report for Calendar Year 1993, (Ref 7). Operations that result in radiological air emissions would not be changed significantly from similar ongoing operations.

Impacts of the No Action Alternative

The impact of the No Action Alternative would be an overall reduction in radiological air emissions. Radiological air emissions would be generated through activities associated with the operations scheduled to continue (see page 11 of this EA) and would not be expected to rise above the baseline conditions (Table 3-3). These emissions would also eventually decrease as the operations are completed.

3.4 Effluent Discharges

3.4.1 Non radiological Discharges

Affected Environment

Mound releases waste water to offsite surface waters via three discharge systems. In 1993 Mound discharged an average of 2.78 million liters of water per day to the Great Miami River. The average flow rate of the Great Miami River is greater than that of Mound's effluents and therefore releases from Mound can be expected to have a minimal impact on river quality.

Mound discharges are regulated by a National Pollution Discharge Elimination System (NPDES) permit. Mound's permit was renewed in October of 1992; it will remain valid through March of 1997.

Mound's NPDES permit requires scheduled collection and analysis of plant effluents at four onsite locations. Additional sampling requirements are required for one offsite outfall and three Great Miami River locations.

During calendar year 1993, Mound collected 1574 samples for analysis of NPDES parameters. One exceedance did occur. On August 5, 1993, Mound recorded a chlorine concentration of 0.76 mg/L in the effluent discharged by the sewage treatment plant; the daily limit for Mound at that location is 0.5 mg/L. The exceedance was reported and corrective action was taken in the form of replacing a faulty solenoid valve. The incident did not reoccur, and the Ohio EPA did not issue a notice of violation or noncompliance.

The NPDES requirements can be found in Appendix C for calendar year 1993. Figure 3-4 shows the locations of the outfalls (NPDES sampling locations). Appendix C also contains a summary table showing the organic compounds detected in Mound effluents in 1993.

Impacts of the Proposed Action

Under the conditions of the lease tenant effluent discharges would be limited to levels currently permitted under the discharge standards, as established under by the Mound Plant's NPDES permit. Potential commercial tenants would be required to demonstrate that proposed operations involving effluent discharges would meet the existing Mound Plant discharge standards.

Processes that are proposed to be brought on site would be reviewed by MMCIC and DOE with respect to their impacts on non radiological effluent discharges, and DOE would conduct additional NEPA review, if appropriate. If the processes proposed to be brought on site are substantially different than ongoing operations, the current waste water permit may require modification. Impacts from effluent discharges, however, will be no greater than the impacts stated in the Nonnuclear Consolidation EA for the Mound Plant Alternative (Ref 1). These stated impacts are increased storm water runoff of up to 132 million gallons per year(Ref 1, page 4-198) of additional waste water.. Any modifications of the NPDES permit must be approved by the Ohio EPA.

Figure 3-4: NPDES Sampling Locations

Impacts of Alternative 1

The impact of Alternative 1 on non radiological liquid effluents would be essentially the same as the current Mound Plant effluent, (Appendix C). Operations that result in liquid effluents would not be changed significantly from similar ongoing operations and would be within the parameters of the current NPDES permit. Under Alternative 1, administrative activities may be moved to the plant to replace the industrial activities that are removed as the DP mission is phased out. As a result, the ratio of industrial waste water to sanitary waste water would decrease. It is expected that this would result in a decrease in the concentrations of various constituents, such as metals and toxic organics, in the Mound Plant liquid effluent.

Impacts of the No Action Alternative

The impacts from the No Action Alternative on the liquid effluent released from the Mound Plant would be an overall long-term decrease in both quantity and concentration of industrial constituents, such as metals and toxic organics. As the industrial operations are removed, the liquid effluent from the plant would be primarily sanitary waste water. The quantity of the sanitary waste water would be anticipated to decrease due to the reduction in the workforce.

3.4.2 Radiological Liquid Effluents

Affected Environment

Radionuclide concentrations in the Great Miami River are shown in Figures 4-6 through 4-9 of the Mound Site Environmental Report for Calendar Year 1993. Total discharges to the Great Miami River during 1993 consisted of 2.5×10^{-4} Ci of plutonium-238, 3.4 Ci of tritium, 3.5×10^{-4} Ci of uranium-233,234 and 8.9×10^{-6} Ci of plutonium-239 (Ref 7). Table 3-5 summarizes the radiological effluents to the water and the hypothetical consequences of the releases.

Averages for 1993 were on the order of one-thousandth of a DCG or less. The primary use of DCG's for liquid releases is to control exposure received from drinking water supplies. Since the Great Miami River is not a source of drinking water, the DCG's only serve to help put the values in perspective. The DOE DCG values for individual isotopes (in water) of concern are: DCG Tritium (2000×10^{-6} uCi/mL), DCG plutonium-238 ($40,000 \times 10^{-12}$ uCi/mL), DCG plutonium-239,240 ($30,000 \times 10^{-12}$ uCi/mL), DCG Radon-222 (NO DOE DCG for radon-222 exists), DCG uranium 238 (6×10^{-7} uCi/mL), DCG uranium 233,234 (5×10^{-7} uCi/mL)

The Mound Plant's processing of radiological effluents is conducted in compliance with DOE Order 5400.5 through implementation of the As Low As Reasonably Achievable (ALARA) Program. The objective of the ALARA Program is to limit the release of radiological effluents and limit potential worker exposure to radioactive materials through conservative use of these materials, containment of radiological materials and equipment, and use of personal protective equipment.

Impacts of the Proposed Action

In the Proposed Action, release levels of radioactive effluents would be expected to remain at or below the current levels identified in 1993 Mound Environmental Report and noted above in Table 3-5. These levels comply with release standards that were developed by DOE to protect public health and safety. Any potential tenant processes that result in release of radiological liquid

Table 3-5 Mound Plant Radiological Effluent in 1993

Radionuclide	Activity (curies)	Maximum Committed Effective Dose Equivalent to a Hypothetical Individual in 1993 (mrem) (a)
Tritium	3.4	0.04
Plutonium-238	2.5×10^{-4}	(b)
Plutonium-239,240	8.9×10^{-6}	(b)
Uranium-233,244	3.5×10^{-4}	(b)

- (a) Hypothetical individual is assumed to remain at the site boundary 24 hours per day throughout 1993. This individual was assumed to have:
- breathed only air containing the highest average radionuclide concentrations measured at an onsite air sampling station
 - drawn all of his/her drinking water from the offsite well with the highest average concentration, and
 - consumed produce exhibiting the concentrations measured in the samples collected from the Miamisburg area.
- (b) Many tritium, plutonium, and uranium measurements were below their respective reagent blanks or environmental levels and, due to the extremely low levels, it is standard practice not to include measurements at these levels

effluents would be subject to the same discharge limits that currently apply at the Mound Plant. These limits would be specified in the conditions of the lease agreement. Processes proposed to be brought on site with the potential for radiological effluent releases higher than the levels shown in 1993 Mound Environmental Report, or releasing different radionuclides, may be rejected as a potential tenant or would be subject to additional NEPA review by DOE.

Impacts of Alternative 1

The impact of Alternative 1 on radiological liquid effluents would be essentially the same as the current Mound Plant baseline (Table 3-5) and in the Mound Environmental Report for Calendar Year 1993, (Ref 7). Operations that result in radiological liquid effluents would not be changed significantly from similar ongoing operations and would be controlled under DOE and State of Ohio radiological liquid effluent levels..

Impacts of the No Action Alternative

The impacts of the No Action Alternative on radiological liquid effluents released from the Mound Plant would be an eventual decrease in their quantity and concentration. This would result from the removal of processes that

generate the radiological liquid effluent. Initially, D&D activities may result in a period of increased (still below DOE Guidelines) discharge of radiological liquid effluent. Radiological liquid effluent would be generated through D&D activities associated with cleaning contaminated building material and consolidating contaminated equipment. After D&D activities are completed, the quantity of radioactive liquid effluent would be expected to approach zero.

3.5 Waste Management Capacity

Affected Environment

Waste management operations at Mound consist of five broad waste types: Transuranic (TRU) (> 100 nCi/gram, atomic # > 92 and half life > 20 years), Low Level Waste (LLW) (< 100 nCi/gram), mixed waste, hazardous/toxic waste, and non-hazardous waste. In calendar year 1993 there was no TRU waste generated at the Mound site. Mound has a backlog of TRU waste of 8904 cubic feet. The waste is currently in storage as no disposal alternative currently exists. Table 3-6 presents the 1993 waste generation at Mound.

Source: Nonnuclear Consolidation Environmental Assessment and Mound Waste Management

Radioactive Waste Streams and Management.

LLW consists of paper, wood, building debris, and soil contaminated with Pu-238, Pu-239, and thorium; and paper, wood, plastic, and scrap equipment contaminated with tritium. Currently, approximately 70 percent of the LLW generated at Mound is a result of ongoing D&D activities. The liquid waste at Mound contaminated with Pu-238 is treated in the Waste Disposal (WD) Facility. The precipitant Pu-238 forms a sludge which is put in drums for disposal. The low-level tritium-contaminated liquid waste is solidified with cement in 55-gal steel drums. Additional low-level management facilities are described in Table 3-7. All solid LLW is transported by commercial carriers in closed vans to a DOE acceptable site. Prior to shipment, LLW is staged in Building 31. As of the end of August 1994, there were approximately 210,000 cubic feet of LLW at the plant awaiting shipment.

Mixed Waste.

Mound's backlog of low-level mixed waste was generated from scintillation vials, lead residue and bricks, PCBs, and contaminated mercury, (Table 3-8). Low-level mixed waste is containerized and stored in Building 23 at Mound pending completion of waste characterization and identification of an acceptable waste treatment/disposal option by DOE. As is the case with all DOE sites, Mound is finding it difficult to comply with land disposal restrictions and waste storage time limits for its mixed wastes, since disposal options are not available. It is anticipated that Mound's glass melter thermal treatment unit, with a treatment capacity of 740 cubic feet per year, would be available in 1997 for treatment of much of Mound's backlog waste. This unit would be used to process mixed waste and vitrify the bottom ash. A RCRA Part B permit application and a Trial Burn Plan for the glass melter have been submitted for Ohio EPA approval. Mound has no current or planned onsite disposal facilities for mixed wastes. Table 3-8 lists the low-level mixed waste types and quantities in storage.

Table 3-6: 1993 Waste Generation at Mound

Waste Type	Quantity Generated	Storage Capacity	Treatment Capacity	Disposal Method
LLW				
Liquid	(1.5 million gallons alpha waste water)	(c)	(c)	(c)
	(30,000 gallons of tritium contaminated waste water) (c)			
Solid	210,000 ft3	700,000 ft3	(d)	Offsite-DOE
TRU	0			
Liquid	0	0	none	none
Solid	0	8950 ft3	none	none

Mixed				
Liquid	79 gal	25,000 gal	None	None
Solid	4.5 ft3	1,600 ft3	None (e)	None
Hazardous/Toxic				
Liquid	19,000 gal	13,365 gal	None	Offsite
Solid	2,825 ft3	2,880 ft3	(a)	Offsite
Non hazardous				
Liquid	47,400,000 gal	(b)	47.5 MGY	Offsite-NPDES Outfall
Solid	140,130 ft3	21,492 ft3	None	Offsite

- a Burn Area has treated an average of 42 ft3/yr of explosive/reactive wastes.
b Additional capacity is obtained as required by renting commercial trailers.
c The Waste Disposal Plant has four influent tanks having a combined storage capacity of 120,000 gallons of alpha waste water. On the average, 30,000 gallons per week of alpha waste water are treated and discharged to the great Miami River. Low-Level tritium contaminated liquid wastes (30,000 gallons per year) are solidified and disposed of as solid LLW.
d Sludges produced in the clariflocculator from the above process are held in two 1,000-gallon tanks until solidified in 55-gallon drums.
e If available, the glass melter thermal treatment unit would have a treatment capacity of 740 ft3/yr.

Table 3-7 Low_Level Waste Facilities at Mound

Facility	Waste Management	Facility Description
Waste Disposal coprecipitation/flocculation of Solidification (WD Bldg.) and supernatant liquid	Liquid Alpha Waste (Pu-238), Beta Waste	Equipment for waste, solidification of sludge, adsorption/filtration of
Staging Area (Bldg. 23) ft high x 60 gross area of	Mixed Waste non-TRU alpha waste	One-story sheet metal building, 12 ft wide x 102 ft long, having a 6,100 ft2
Waste Solidification Facility and packaging for (SE-149)	Tritiated Waste	Tritiated liquid solidification off-site shipment and burial
Effluent Removal System tritium from (SW) they are	Tritiated Waste	Air detritiation system removes process effluent streams before released to the atmosphere
Compactor (T-Bldg.)	Low Specific Activity (beta)	Hydraulic-ram compactor
Glass Melter (WDA) containing butned, wet high efficiency	(alpha, beta, gamma)	Development refractory chamber molten glass over which waste is off-gas treatment system, and

wastes (Mound use with		filter used for line-generated expects to permit the unit for radioactive mixed)
Compactor (SW Bldg.)	Low Specific Activity (beta)	Hydraulic-ram compactor
Equipment at Various used to reduce Waste Generating Area shipment	Low-level alpha solid waste	Where practical, compactors are waste volume in drums prior to

Source: Nonnuclear Consolidation Environmental Assessment and Mound Waste Management

Table 3-8 Mound Plant Low_Level Mixed Waste Types and Quantities in Storage

Waste Type	Quantity
Liquid Scintillation (vials)	189 drums (1,418 ft3) containing closed vials
Lead Residue and Bricks 55-gal two 55-gal 7A)	One 30-gal drum of residue, two 30-gal drums of bricks; one drum of lead scrap, two 5-gal 37-A cans of bricks and scrap, drums of RCRA corrosive TRU waste, two plywood boxes (strong, tight) containing waste batteries, one steel box (U.S. DOT containing lead waste; total volume waste lead - 185 ft3
Polychlorinated Biphenyls (PCBs) (equipment-	20 drums of solid, 14 drums of liquid, 1 box of solid machine press); total volume PCBs - 250 ft3
Contaminated Mercury	Four containers totaling less than 3 liters

Source: Nonnuclear Consolidation Environmental Assessment and Mound Waste Management

Hazardous/Toxic Waste Streams and Management.

Hazardous/toxic wastes are generated in several production and laboratory facilities at Mound. The quantity of the wastes can be found in Table 3-6 and are summarized as follows: 19,000 gallons and 2,825 cubic feet of liquid and solid hazardous waste; 47,400,000 gallons and 140,130 cubic feet of liquid and solid non hazardous waste; 30,000 gallons and 210,000 cubic feet of radioactive low level waste; 79 gallons and 4.5 cubic feet of liquid and solid mixed waste; and 8904 cubic feet of TRU waste. The disposal methods for each are summarized in Table 3-6 and the current storage/treatment facilities at Mound are listed in Table 3-10. Mound has submitted a revised RCRA Part A and B permit application which is currently being processed by the State. There are no active onsite disposal facilities for hazardous wastes at Mound. Wastes currently treated onsite are explosives and pyrotechnics. Approximately three hundred pounds of these materials are treated annually by open burning on a hearth inside a facility and by use of a retort (a vessel or chamber in which substances are distilled or decomposed by heat in a controlled manner). All other hazardous wastes (Table 3-6) are treated and disposed of offsite by RCRA-permitted commercial contractors. Prior to offsite shipment, all hazardous/toxic waste is packaged in DOT-approved containers, mostly 55-gal drums, manifested and shipped under contract with DOT-registered transporters to RCRA- or TSCA-permitted facilities for treatment or disposal depending on the waste form. Approximately 2,000 pounds per year of lead-acid batteries are also sent offsite for recycle or reuse. Mound has a program to monitor the offsite management of its hazardous wastes by commercial facilities on a regular basis. Records and manifests are maintained for all hazardous wastes picked up from Mound generators that are shipped offsite for treatment or disposal.

Table 3-9 Mound Plant Hazardous/Toxic Waste Nature and Handling Procedures

Waste Stream and Quantity	Nature of Waste	Handling of Waste
Organic Solvents staging area, and (approximately 80- 55 to offsite disposal gallon drums)	Flammable Liquids	Picked up weekly, consolidated at Stored in steel drums in Bldg. 72 prior
Waste Oils operating area, and (approximately 36- 55 gallon drums)	Flammable or combustible liquids	Consolidated in 55-gal drums at stored in Bldg. 72 for offsite disposal
Discarded Excess Paints operating area, and and Thinners (approximately 25- 55 gallon drums)	Flammable or combustible liquids	Consolidated in 55-gal drums at stored in Bldg. 72 for offsite disposal
Waste Corrosive size drums at operating Solution (approximately offsite disposal 53- 55 gallon drums)	Mostly caustic and acid solutions	Consolidated in 55-gal drums or other area, and stored in Bldg. 72 for
Spent Plating-Bath size drums at operating Solution (approximately offsite disposal 75- 55 gallon drums)	Toxic liquid containing heavy metals	Consolidated in 55-gal drums or other area, and stored in Bldg. 72 for
Waste and placed in PCBs(approximately 107- 55 gallon drums)	Toxic liquid	Stored in marked cans or drums labeled Bldg. 72 for offsite disposal
Toxicity Characteristic drums at operating Waste (approximately 8- offsite disposal 55 gallon drums)	Various liquid and solid wastes	Consolidated in 55-gal or other size areas, and stored in Bldg. 72 for
Photo-Processing polyethylene-lined Waste (approximately 14- offsite disposal 55 gallon drums)	Waste containing precious metals, caustic solution, and acetic acid	Picked up weekly, consolidated into 55-gal drums and stored in Bldg. 72 for
Laboratory vermiculite for Wastes (approximately 122- 55 gallon drums)	Solvents; flammable, reactive, toxic liquids in small quantities	Packed in steel containers with incineration of Land-filling

Source: Nonnuclear Consolidation Environmental Assessment and Mound Waste Management

Table 3-10 Mound Plant Hazardous Waste Storage and Treatment Facilities

Facility Dimensions	Use	Approximate
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Hazardous Waste Storage Facility (Bldg. 72)	Principle hazardous waste storage area	40 ft x 60 ft; 10 ft high
Explosive Waste Storage Magazine 53	Explosive waste storage bunker	10 ft x 15.5 ft; 10 ft high
Pyro Shed Storage	Storage area for pyrotechnic materials	9 ft x 15 ft; 7 ft high
Thermal Treatment of ft x 10 ft Explosive Waste	Drum unit for burning explosives-contaminated materials	55 gallon drum in 10 ft x 10 structure
Open burning of explosive with drum Waste	Apparatus for burning solid explosives-contaminated materials/scrap	Located in same structure unit (above)
Retort	Unit for burning fabricated components/assemblies containing explosives	3 ft diameter, 10 ft long
Pyro Waste Conversion Unit cylinder in a 30	Apparatus for treatment of pyrotechnic cleanup solutions	1 ft diameter, 2 ft high in x 30 in x 6 in tray

Source: Nonnuclear Consolidation Environmental Assessment and Mound Waste Management

Non hazardous Waste Streams and Management.

Non hazardous wastes are generated routinely and include general plant refuse such as paper, cardboard, glass, wood, plastics, scrap, metal containers, etc. Non hazardous wastes are segregated and recycled whenever possible. Metallic and wood waste, stored in a salvage area, is sold periodically by lot sale as surplus. Trash is accumulated onsite and taken to the local sanitary landfill on a regular basis. For calendar year 1993 Mound generated approximately 59,500 cubic yards of uncompacted non-hazardous waste.

Impacts of the Proposed Action For Waste Management

Commercial enterprises that lease space at the Mound Plant would be bound through lease agreements to conduct their waste management operations independent of Mound's hazardous waste operations permit. Mound's treatment, storage and facilities would not be available to tenants. Any individual permits would be obtained by tenants prior to operations as required by Part I, 8A of the General Lease (Appendix A).

Emphasis would be placed on attracting operations to the plant that have already shown success with replacing hazardous process materials with non hazardous materials. An effort will be made to bring in processes with waste streams that are safe and compatible with Mound operations. It is expected that the Proposed Action would result in a slight change in specific types of hazardous wastes, for example, manufacture of plastics may result in plastic resin wastes. Tenant operations that would exceed the total volumes show in Table 3.6 would not be considered as potential tenants or would be subject to further DOE NEPA review. Although tenants would not be expected to have waste volumes in excess above those listed in Table 3-6, the volumes will not go above those for the Mound Plant Alternative of the Nonnuclear Consolidation EA, (Ref 6), (Appendix D).

Volumes of radioactive wastes are expected to remain similar to those produced by current activities (30,000 gallons per week and 210,000 cubic feet of liquid and solid Low Level Waste), (Table 3-6).on page 35. Additional procedures and rules would be developed that apply to the specific waste types being generated. The subleases with prospective tenants would ensure adherence to these rules. All waste handling activities would be conducted in compliance with applicable Federal, State, and local requirements.

Impacts of Alternative 1

The impacts from Alternative 1 on generation of solid, hazardous, and radioactive wastes would be essentially the same as the current Mound Plant

baseline shown in Table 3-6, (page 35). Waste reduction would be conducted as a continuation of ongoing waste minimization activities and would include, as appropriate, use of replacement materials for hazardous chemicals. If administrative activities replace current industrial operations, the volume of hazardous and radioactive wastes would be reduced in proportion to the contribution of the industrial operations that are removed. All waste handling activities would be conducted in compliance with all applicable Federal, State, and local requirements.

Impacts of the No Action Alternative

The impacts from the No Action Alternative would be a gradual decrease in the volume of solid, hazardous, and radioactive wastes. After D&D activities are completed, the volume of production-related hazardous and radioactive wastes would be reduced to near zero. The volume of solid wastes would be reduced to those nominal levels necessary to support maintenance, security, and ER activities.

3.6 Waters

3.6.1 Water Demand

Affected Environment

Three deep wells which extend into a Buried Valley Aquifer supply the plant with all water needs. . During 1993, the Mound Plant utilized approximately 231 million gallons of water (State of Ohio Water Withdrawal Facility Registration Annual Report Form, facility registration # 01572 EG&G Mound Applied Technologies).

Impacts of the Proposed Action

The impacts of the Proposed Action on water usage are not expected to be substantially different than those associated with operations currently being conducted at the Mound Plant. Lease agreements would be written so that new plant tenants would be financially responsible for a proportional share of the water utility charges, (Appendix A). With the tenants' water usage costs directly proportioned to water utilization, it is expected that tenants would conserve water in order to be more cost effective. The MMCIC would be responsible for determining the share of water costs that are applicable to each tenant. The overall impact of the Proposed Action on Mound Plant water utilization would be to maintain, or slightly decrease, the current consumption rate.

Impacts of Alternative 1

The impacts from Alternative 1 on water usage would be essentially the same as the current Mound Plant consumption rate (i.e., the recent maximum water demand represented by the 231 million gallons used in 1993).

Impacts of the No Action Alternative

The impact from the No Action Alternative on water usage would be a gradual reduction of water utilization. D&D activities may require an initial period of increased water usage. After D&D activities are completed, water requirements would be limited to those associated with maintenance, security, and ER activities.

3.6.2 Groundwater

Municipal and industrial water supplies in the vicinity of the site depend upon high capacity wells drilled into unconsolidated sand and gravel aquifers. The principal aquifer in the area, the Buried Valley Aquifer, is composed of Pleistocene sand, gravel, and fine grained till. The Buried Valley Aquifer is located immediately west of the Mound facility, and does underlie the southwestern portion of the property. The maximum known thickness of the aquifer within the site boundary is approximately 70 ft. The aquifer thickens towards the Great Miami River and reaches a maximum thickness of approximately 150 ft near the river channel. Recharge to the Buried Valley Aquifer is available from direct infiltration from the great Miami River, leakage along the valley walls at the bedrock-outwash contact, precipitation and induced infiltration caused by hydraulic sinks due to pumping. Water samples are periodically collected from community supplies in the surrounding area, private wells, and Mound's onsite wells. The wells onsite

at Mound are analyzed for plutonium-238, uranium-233/234,-238, and tritium. Analyses show that plutonium concentration levels in all cases are well below DOE and EPA limits. Samples from some locations have been analyzed for uranium; concentrations and isotopic ratios are typical of naturally occurring background levels in the shales and other rocks of the area. Tritium levels are within EPA maximum contaminant levels. Table 3-11 summarizes the radionuclide concentrations found in the onsite production wells in 1993, (Ref 7).

Non radioactive pollutant levels are also within water quality criteria. The non radioactive (VOC) contaminant concentrations in onsite production wells are summarized in Table 3-12, (Ref 7).

Table 3-11 Radionuclide Concentrations in Mound Productions Wells, 1993

as % of Radionuclide Standard	Well ID	No. of Samples	Max Concentration	Average Concentration	Average EPA

Tritium	0071	40	3.2nCi/L	1.4nCi/L	7.0
	0271	39	2.1nCi/L	1.6nCi/L	8.0
	0076	46	1.7nCi/L	1.1nCi/L	5.5

Plutonium-238	0071	11	3.28 x 10E-12 uCi/L	0.88 x 10E-12 uCi/L	0.06
	0271	10	4.03 x 10E-12 uCi/L	0.46 x 10E-12 uCi/L	0.03
	0076	12	3.0 x 10E-12 uCi/L	0.47 x 10E-12 uCi/L	0.03

Plutonium-239,240	0071	11	2.45 x 10E-12 uCi/L	0.82 x 10E-12 uCi/L	0.07
	0271	10	3.35 x 10E-12 uCi/L	0.60 x 10E-12 uCi/L	0.05
	0076	12	1.15 x 10E-12 uCi/L	0.20 x 10E-12 uCi/L	0.02

Uranium-233,234	0071	11	0.26 x 10E-9 uCi/L	0.22 x 10E-9 uCi/L	1.1
	0271	10	0.23 x 10E-9 uCi/L	0.19 x 10E-9 uCi/L	1.0
	0076	12	0.27 x 10E-9 uCi/L	0.23 x 10E-9 uCi/L	1.2

Uranium-238	0071	11	0.22 x 10E-9 uCi/L	0.19 x 10E-9 uCi/L	0.8
	0271	10	0.20 x 10E-9 uCi/L	0.16 x 10E-9 uCi/L	0.7
	0076	12	0.24 x 10E-9 uCi/L	0.20 x 10E-9 uCi/L	0.8

Table 3-12 VOC Concentration in Mound Production Wells, 1993

Well I.D	Compound	No. of Samples	Maximum concentration (ug/L)	MCL (a) (ug/L)
0071	1,1,1 - Trichloroethane	7	1.4	200
	cis - 1,2 - Dichloroethane	7	17	70
	Trichloroethene	7	5.2	5
	Tetrachloroethene	7	0.7	5
0271	Freon 113	7	3.0	(b)
	1,1,1 - Trichloroethane	7	1.2	200
	cis - 1,2 - Dichloroethane	7	7.2	70
	Trichloroethene	7	1.8	5
	Tetrachloroethene	7	0.5	5
0076	Freon 113	7	2.0	(b)
	1,1,1 - Trichloroethane	7	0.6	200
	cis - 1,2 - Dichloroethane	7	3.0	70
	Trichloroethene	7	2.0	5

a MCL = Maximum Contaminant Level (based on EPA Primary Drinking Water Standards),(40 CFR 141-143).

b there is no MCL for Freon 113

Impacts of the Proposed Action, Alternative 1, and the No Action Alternative

The plant currently has a drainage control system which is capable of isolating and containing spills which may occur onsite. Therefore the Proposed Action, Alternative 1, and the No Action Alternative are not expected to have any impact on groundwater at the Mound Plant. Only environmental restoration activities, which are consistent through implementation of all three alternatives, would have any effect on groundwater systems, (a positive impact by removal or reduction of low level VOC contamination). The impact, therefore, of all three alternatives on site groundwater would be the same and would be negligible.

3.7 Threatened and Endangered Species

According to the Fish and Wildlife Service of the U.S. Department of the Interior (Letter, Kroonmeyer 1991; see Appendix B), the Mound Plant lies within the range of the Indiana Bat (*Myotis sodalis*), a federally listed endangered species. The bat has not been seen on-site. Shagbark hickories (common to southwest Ohio) and other live or dead trees with exfoliating bark may host the bat from May 1 through August 31. However, according to the Dayton Museum of Natural History, a field survey in April 1991 did not locate any shagbark hickories on-site (Letter, Hissong 1991; see Appendix B). During the time from May 1 through August 31, preconstruction site inspections are conducted to assess whether any potential host trees are present.

During ecological assessment activities conducted under the CERCLA program at the Mound Plant, a single specimen of Inland Rush (*Juncas interior weig*) was discovered growing on the Mound south property (Ref 14). The Inland Rush has been designated a state "endangered species" by the Ohio Division of Natural Areas and Preserves. Since the specimen is located on the south property which is outside the scope of this EA it has not been further considered.

According to existing records, no other rare or endangered species have been found at the proposed site or any alternative site (Letters, Hillmer 1992 and Kroonmeyer 1992; see Appendix B).

Impacts of the Proposed Action, Alternative 1, and the No Action Alternative

The Proposed Action, Alternative 1, and the No Action Alternative would not be expected to have any effect on threatened or endangered species in the area of the Mound Plant. Such species (other than the single specimen of Inland Rush, (*Juncas interior weig*) are not observed on the plant site, nor are they likely to be dependent on the site for food and habitat due to the commercial and residential development surrounding the plant.

3.8 Accident Analysis

Three accident scenarios have been analyzed which adequately characterize the risks associated with likely economic development business proposals. The proposals involve three different types of operations, with different hazards for each operations. The accident scenarios analyzed provide a spectrum of accidents in terms of the probability and consequence found in DOE Order 5481.1B Safety Analysis and Review System. The accidents analyzed include: 1) inadvertent ignition of 10 pounds of High Explosive during operations in Building 27,.2) inadvertent ignition of thermite powder during machining operations in Building 43 and 3) a spill of laboratory quantities of acid in the environmental analysis laboratory of E-Building. Greater detail on each of these scenarios is provided in sections 3.8.1, 3.8.2 and 3.8.3 of this EA.

One additional accident scenario involving the potential release of plutonium-238 Radioisotopic Thermoelectric Generator (RTG) fuel was examined for the NE operations which are scheduled to continue at the Mound Facility. The RTG plutonium-238 fuel is encapsulated in clads which have been designed to survive space shuttle launch and reentry accidents, (Ref 15). A safety analysis of the fuel clads concluded that the probability associated with breaching the cladding and subsequently exposing the fuel is less than 1×10^{-6} events/year; as a result of this extremely low probability of occurrence, the consequences of the accident were not further evaluated for the purposes of this EA.. The facility in which the NE operations take place is a nuclear facility equipped to handle radioactive materials and operational accidents involving these materials. The conclusions of the safety analysis indicate that these NE operations can be conducted safely without considerable risk to the workers, public and environment. These operations are not expected to have any impacts on the proposed action described in this EA, nor is it anticipated

that the proposed action would impact the NE operations.

Many types of hazards exist at the Mound Plant, (chemical, radiological, electrical, etc.) and management of these hazards, through the use of administrative and engineering controls, helps ensure that the risk associated with these hazards is low. In the event that the Mound Plant does experience an emergency condition, in compliance with DOE 5500.1B, Emergency Management System, and 5500.3A, Planning and Preparedness for Operational Emergencies, the Mound Plant has prepared a Site Emergency Plan. The emergency plan describes the site emergency management program, defines the plants emergency response capabilities, and integrates the response plans for specific types of accidents.

The Department of Energy and/or its representative will not provide safety oversight for tenant operations. Tenants will be required to comply with all applicable safety criteria as implemented through Occupational Safety and Health Agency (OSHA) regulations.

3.8.1 Inadvertent Ignition of 10 lbs of High Explosive in Building 27

Explosive operations conducted in Building 27 are conducted in individual bays. Operations include re-crystallization and wet blending of high explosives and oven or freeze drying of explosives. The explosive limits for these bays are administratively controlled at a maximum of 10 pounds of High Explosive. Additionally, no other personnel are permitted in the facility except those working directly in the operating bay and only one operation is allowed to be performed in the building at any given time. The inadvertent ignition of 10 pounds of high explosive is the maximum credible event for Building 27. The inadvertent ignition of 10 pounds of high explosive is considered an extremely unlikely event with resulting high consequences. The consequences of this event would result in considerable structural damage to the bay, over pressures sufficient to cause death to any workers in the bay at the time of ignition, and fragments being thrown from the facility as a result of perforation of the exterior structural walls. A fragment arc analysis shows that none of the fragments thrown from the facility would impact adjacent facilities (Ref 16).

3.8.2 Inadvertent Ignition of Thermite Powder During Machining Operations

Operations in Building 43 include the machining of consolidated metal-like thermites. Machining operations may involve removal of burrs, flashing or drilling holes into the consolidated thermite. Operators performing the machining use a lathe or mill, both of which are protected within interlocked barriers. The inadvertent ignition of thermite during machining operations has been determined to be approximately 1×10^{-4} ignitions / operation with approximately 200 thermite machining operations / year, for a final annual frequency of inadvertent ignition of 0.02 ignitions / year. Assuming the interlock fails (highly unlikely) the consequences from an inadvertent ignition have been approximated at a 0.5 probability of severe injury or death to the operator. Occupants in the room farther than 3 meters away would most likely be safe (Ref 17). This accident would not have any effects on adjacent facilities or personnel outside of the thermite machining facility.

3.8.3 Spill Lab Quantity (1 gallon) of Concentrated Acid in the Environmental Analysis Lab

Lab quantities of chemicals are routinely handled in the environmental analysis laboratory located in E-Building. For this accident scenario, a technician is assumed to spill a 1 gallon container of concentrated acid onto the lab floor. This type of accident would be considered a high probability, low consequence event. The accident would be expected to potentially cause chemical burns to the technicians skin, and potential inhalation of toxic vapors. These consequences are mitigated by standard lab practices including protective clothing, safety glasses, safety showers and eye wash stations. The spill would initiate a response from Industrial Hygiene and would be cleaned up using standard lab hazardous material response techniques. This accident would not impact any adjacent facilities and would most likely involve only temporary evacuation of the lab in which the spill occurred.

4. Agencies, Organizations, and Persons Consulted

The Federal, State, and local agencies and other private organizations that were contacted during the preparation of this EA, or documents referenced in this EA, are listed below:

- City of Miamisburg, Richard Church, Mayor
- City of Miamisburg, Micheal Grauwelman, Manager of Mound Transition
- City of Miamisburg, Community Development Department
- Miamisburg Mound Community Improvement Corporation
- United States Department of Interior, Fish and Wildlife Service, Reynoldsburg Ohio Field Office, Mr. Kent Kroonemeyer, Field Supervisor
- Dayton Museum of Natural History, Mr. Thomas Hissong, Curator of Education.
- Ohio Department of Natural Resources, Ms. Jennifer Hillmer, Ecological Analyst, Division of Natural Areas and Preserves
- Ohio Department of Natural Resources, Mr. Stuart Lewis, Administrator, Ohio Scenic Rivers program, Division of Natural Areas and Preserves
- Ohio Historical Society, Ohio Historic Preservation Office, Ms. Judith Kitchen, Department Head Technical Review Services.
- U.S Army Corps of Engineers and U.S. Fish and Wildlife Service, Discussions on Delineation of Wetlands.

5.0 References

1. DOE/EA-0792, Nonnuclear Consolidation Environmental Assessment, Volumes I and II, U.S. Department of Energy Office of Defense Programs, June 1993.
2. Letter from Richard Claytor, (Assistant Secretary for Defense Programs), to Bruce Twinning, (Manager Albuquerque Field Office), regarding the Nonnuclear Consolidation Implementation Plan (Discussed the closing of the Mound, Pinellas and Rock Flats Plants), December 23, 1991
3. Memorandum for Headquarters and Field Elements of November 30, 1993, Subject: Future of the Task Force on Worker and Community Transition, From: Hazael R. O'Leary, The Secretary of Energy.
4. 1994 and 1995 National Defense Authorization Acts: Authorizes Federal Funding for Economic development Activities
5. Mound Plant Future Use Plan, EG&G Mound Applied Technologies, 12/21/93
6. Capabilities at Mound, Technology for the Future of this Country: EG&G Mound Applied Technologies, July 1993
7. Mound Site Environmental Report for Calendar Year 1993, August 1994.
8. Operable Unit 9, Hydrogeologic Investigation: Wetlands Determination Report, Mound Plant, U.S. Department of Energy, Albuquerque Operations Office, 1/94.
9. MLM-ML-93-0002, Mound Plant Construction Plan: EG&G Mound Applied Technologies, March 1993
10. Workforce Restructuring Plan, (3161 Plan), Dayton Area Office, May 2, 1994.
11. Personal communication with Mr. Thomas Hughes, Manager, EG&G Mound Applied Technologies, 9/94.
12. Executive Order 12898 of February 11, 1994, Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations, Title 3 - The President.
13. 402-B-92-001, Users Guide for CAP88-PC, Version 1.1, U.S Environmental Protection Agency, March 1992.
14. Operable Unit 9, Ecological Characterization Report, U.S. Department of Energy, Albuquerque Operations Office, 3/94
15. Summary of General Purpose Heat Source Safety Tests, Letter from R.W. Zocher, (Los Alamos National Laboratory), to Mr. James Lombardo, (DOE), March 11, 1986.
16. MLM-ML-94-42-0001, Structural and Operational Evaluation of Building 27, EG&G Mound Applied Technologies, Feb, 1994.
17. MLM-ML-93-47-0001, Safety Assessment of Building 43, EG&G Mound Applied Technologies, July, 1993.
18. Mound Plant Environmental Monitoring Plan, EG&G Mound Applied Technologies, July 18, 1994

6.0 List of Acronyms and Abbreviations

ACGIH	American conference of Governmental Industrial Hygienists
ALARA	As Low As Reasonably Achievable

ARAC	Atmospheric Release Advisory Capability
A AQCR	Air Quality Control Region
BOD	Biochemical Oxygen Demand
BVA	Buried Valley Aquifer
CAA	Clean Air Act
CEDE	Committed Effective Dose Equivalents
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
Ci	Curie
CO	Carbon Monoxide
CRO	Community Reuse Organization
DCG	Derived Concentration Guidelines
D&D	Decontamination and Decommissioning
DOE	Department of Energy
DOT	Department of Transportation
DP	Defense Programs
EA	Environmental Assessment
EDE	Effective Dose Equivalent
EIS	Environmental Impact Statement
EM	Environmental Restoration and Waste Management
EOC	Emergency Operations Center
EPA	Environmental Protection Agency
ER	Environmental Restoration
FBI	Federal Bureau of Investigations
FEIS	Final Environmental Impact Statement
FFA	Federal Facilities Agreement
FONSI	Finding of No Significant Impact
FY	Fiscal Year
HAP	Hazardous Air Pollutants
LANL	Los Alamos National Laboratory
LLW	Low Level Waste
MB	Miamisburg Area Office
MCL	Maximum Contaminant Level
MEDE	Maximum Effective Dose Equivalent
MMCIC	Miamisburg Mound Community Improvement Corporation
MRC	Mound Reuse Committee
NAAQS	National Ambient Air Quality Standards
NE	Office of Nuclear Energy
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutant Sources
NOx	Nitric oxides
NPDES	National Pollutant Discharge Elimination System
OSHA	Occupational Safety and Health Act
OU	Operable Unit
PCB	Polychlorinated Biphenols
RAPCA	Regional Air Pollution Control Agency
RCRA	Resource Conservation and Recovery Act
ROI	Region of Interest
RTG	Radioisotopic Thermoelectric Generator
SOx	Sulfur dioxide
SIP	State Implementation Plan
TPY	Tons Per Year
TRU	Transuranic
TSCA	Toxic Substances Control Act
TSP	Total Suspended Particulate
TLV	Threshold Limit Value
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound
WD	Waste Disposal

7.0 GLOSSARY

Administrative Controls: Procedures and standards that promote the safe operation of equipment or the safe performance of an operation.

Air Quality Control Region: An interstate area designated by the Environmental Protection Agency (EPA) for the attainment and maintenance of National Ambient Air Quality Standards.

Air Quality Standards: The level of pollutants prescribed by regulations that may not be exceeded during a specified time in a defined area.

Ambient Air: The surrounding atmosphere, as it exists around people, plants, and structures.

Aquatic Biota: The sum total of living organisms within any designated aquatic area.

Aquifer: A saturated geologic unit through which significant quantities of water can migrate under natural hydraulic gradients.

Archaeological sites (resources): Any location where humans have pre historically or historically altered terrain or discarded artifacts.

Atmospheric dispersion: The process of air emissions being dispersed in the atmosphere. This occurs by the wind that carries the pollutants away from their source and by turbulent air motion that results from solar heating of the earth's surface and air movement over rough terrain and surfaces.

Attainment Area: An area considered to have air quality as good as, or better than, the national ambient air quality standards as defined in the Clean Air Act (CAA). An area may be an attainment area for one pollutant and a non attainment area for others.

Baseline: A quantitative expression of conditions, costs, schedule, or technical progress to serve as a base or standard for measurement during the performance of an effort; the established plan against which the status of resources and the progress of a project can be measured. The environmental baseline is the site environmental conditions as they are projected to occur in a special time period.

Biochemical Oxygen Demand: The quantity of oxygen utilized in the biochemical oxidation of organic matter.

Carbon Monoxide (CO): A colorless, odorless gas that is toxic if inhaled in high concentration over a period of time.

Categorical Discharge Standard: A list of limits for a particular constituent in waste water that is associated with a specific type (category) of industrial process or activity. The EPA defines these limits. The limits are associated with compliance with 40 CFR Part 403, General Pre treatment Regulations for Existing and New Sources of Pollution.

Clean Air Act: Federal law mandating and enforcing air pollutant emissions standards for stationary sources and motor vehicles.

Clean Air Act Amendments (CAAA) of 1990: Expands the EPA enforcement powers and adds restrictions on air toxics, ozone depleting chemicals, stationary and mobile emissions sources, and emissions implicated in rain and global warming.

Clean Water Act (CWA): This law makes it illegal to discharge pollutants and dredged and fill material from a point source into navigable water of the U.S. except in compliance with the National Pollutant Discharge Elimination Standard (NPDES).

Code of Federal Regulations (CFR): All Federal regulations in force are published in codified form in the Code of Federal Regulations.

Committed Dose Equivalent (CDE): The predicted total dose equivalent to a tissue or organ over a 50-year period after intake of radionuclide into the body. It does not include external dose contributions. Committed dose equivalent is expressed in units of rem or (Sv).

Committed Effective Dose Equivalent (CEDE): The sum of the committed dose equivalents to various tissues in the body, each multiplied by the appropriate weighing factor. Committed effective dose equivalent is expressed in units of rem or (Sv).

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund): A statutory framework for remediation of past contamination from hazardous waste.

Criteria Pollutants: Six air pollutants for which national ambient air quality standards are established by EPA: sulfur dioxide, nitric oxides, carbon monoxide, ozone, particulate matter (smaller than 10 microns in diameter), and lead.

Cumulative Impacts: An impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what organization or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Curie: The official unit of radioactivity, defined as exactly 3.70×10^{10} disintegrating atoms per second. This decay rate is nearly equivalent to that

exhibited by one gram of radium in equilibrium with its disintegration products.

Decommissioning: Removing facilities contaminated with radiation, such as processing plants, waste tanks, and burial grounds, from service and reducing or stabilizing radioactive contamination. Decommissioning includes the following concepts: 1) decontamination, dismantling, and return of an area to its original condition without restrictions on use or occupancy, and 2) partial decontamination, isolation of remaining residues, and continued surveillance and restrictions on use or occupancy.

Decontamination: The removal of radioactive or chemical contamination from facilities, equipment, or soils by washing, heating, chemical or electrochemical action, mechanical cleaning, or other techniques.

Derived Concentration Guide: The concentration of a radionuclide in air or water which, under conditions of continuous exposure by one exposure mode (i.e., ingestion of water or submersion or inhalation of air), for one year, a "Reference man" would receive the most restrictive of 1) and effective dose equivalent or 100 mrem (1mSv), or 2) a dose equivalent of 5 mrem (50 mSv) to any tissues, including skin and lens of the eye.

Direct Economic Effects: The initial increases in output from different sectors of the economy resulting from some new activity within a predefined geographic region.

Dose Equivalent: The product of absorbed dose in rad (or Gy) in tissue (quality factor). Dose equivalent is expressed in units of rem (or Sv, where 1 rem = 0.01 Sv). The dose equivalent to an organ, tissue, or the whole body will be that received from the direct exposure plus the 50-year committed dose equivalent received from the radionuclides taken into the body during the year.

Drinking Water Standards: The prescribed level of constituents or characteristics in a drinking water supply that cannot be exceeded legally.

Effective Dose equivalent (EDE): The summation of the products of the dose equivalent received by specified tissues of the body and a tissue-specific weighting factor. This sum is a risk-equivalent value and can be used to estimate the health effects risk of the exposed individual. The tissue-specific weighting factor represents the fraction of the total health risk resulting from uniform whole-body irradiation that would be contributed by that particular tissue. The EDE includes the CEDE from the internal deposition of radionuclides, and the EDE due to penetrating radiation from sources external to the body. EDE is expressed in units of rem (or Sv).

Effluent: A gas or fluid discharged into the environment.

Emission Standards: Legally enforceable limits on the quantities and/or kinds of air contaminants that can be emitted into the atmosphere.

Energetic Materials: high explosives, pyrotechnics, and propellants.

Engineering Controls: Designed systems or modifications that are made to equipment, utilities, or ergonomic features within a workplace that promote the safe use of such equipment or reduce the possibility that an accident will occur involving the equipment.

Endangered Species Act: Established in 1973, this act requires Federal Agencies, with the consultation and assistance of the Secretaries of the Interior and Commerce, to insure that their actions will not likely jeopardize the continued existence of any endangered or threatened species or adversely affect the habitat of such species.

Endangered Species: Animals, birds, fish, plants, or other living organisms threatened with extinction by man-made changes in their environment. Requirements for declaring endangered species are contained in the Endangered Species Act.

Environmental Assessment (EA): A written environmental analysis which is prepared pursuant to the National Environmental Policy Act (NEPA) to determine whether a proposed Federal action may significantly affect the environment and thus require preparation of a more detailed Environmental Impact Statement (EIS). If the proposed action would not significantly affect the environment, then a FONSI is prepared.

Environmental Impact Statement (EIS): A document required of Federal agencies by NEPA for major proposals or legislation significantly affecting the environment. A tool for decision making, it describes the positive and negative effects of the undertaking and alternative of actions.

Exceedance: Violation of environmental protection standards by exceeding allowable limits or concentration levels.

Finding of No Significant Impact: A document by a Federal agency briefly presenting the reasons why a proposed action, not otherwise excluded, would not have a significant effect on the human environment and would not require preparation of an Environmental Impact Statement.

Floodplain: The lowlands adjoining inland and coastal waters and relatively flat areas including at a minimum that area inundated by a 1 percent chance or greater chance of flood in any given year. The base floodplain is defined as the 100 year (1 percent) floodplain. The critical floodplain is defined as the 500 year (0.2 percent) floodplain. "Critical Action" means any activity for which even a slight chance of flooding would be too great. Such actions may include the storage of highly volatile, toxic, or water reactive materials.

General Public: Individuals who are normally at and beyond the DOE facility boundary; includes individuals who are on DOE facility open-access way (roads, rivers, creeks, railways, etc.)

Glass Melter: A development refractory chamber containing molten glass over which the waste is burned.

Groundwater: The supply of fresh water found beneath the Earth's surface, usually in aquifers, which is often used for supplying wells.

Guideline Level: A suggested, desired level of concentration. it is not a regulatory value, but is a value offered as desirable by an agency to protect human health or the environment.

Hazardous Material: A substance or material, including a hazardous substance, which poses a risk to health, safety, and property when transported or handled.

Hazardous/toxic waste: Any solid waste (can also be semisolid or liquid, or contain gaseous material) having the characteristics of ignitability, corrosivity, toxicity, or reactivity, defined by the RCRA and identified or listed in 40 CFR 261 or by the Toxic Substances Control Act (TSCA).

Historic Resources: Archaeological sites, architectural structures, and objects produced after the advent of written history dating to the time of the first Euro-American contact in the area.

Low Level Waste (LLW): Waste that contains radioactivity, but is not classified as high-level waste, transuranic waste, spent nuclear fuel, or "low-level by-product material" as defined by DOE 5820.2. Test specimens of fissionable material irradiated for research and development only, and not for the production of power or plutonium, may be classified as low-level waste, provided the concentration of transuranic waste is less than 100 nCi/g. Some

LLW is considered classified because of the nature of the generating process and/or constituents, as the waste would tell too much about the process.

Maximum Contaminant Level (MCL): The maximum permissible level of a contaminant in water delivered to any user of a public water system. MCLs are enforceable standards.

Millirem: A unit used to represent the radiation dose for biological absorption. It is one-millionth of a rem (see rem in this glossary).

Mixed Wastes: Waste that contains both hazardous and radioactive waste
National Environmental Policy Act (NEPA, 1969): The basic national charter for the protection of the environment. Its main purpose is to provide environmental information to federal decision makers so that their actions are based on an understanding of the potential environmental consequences of a proposed action and its reasonable alternatives.

National Ambient Air Quality Standards (NAAQS): Air quality standards established by the Clean Air Act. The primary NAAQS are intended to protect the public health with an adequate margin of safety, and the secondary NAAQS are intended to protect the public welfare from any known or anticipated adverse effects of a pollutant.

National Emission Standards for Hazardous Air Pollutants: A set of national emission standards for listed hazardous pollutants emitted from specific classes or categories of new and existing sources. These were introduced in the Clean Air Act Amendments of 1977.

National Pollutant Discharge Elimination System (NPDES): Federal permitting system required for hazardous effluents regulated through the Clean Water Act.

Nonattainment Area: An air quality control region, or portion thereof, in

which the U.S. Environmental Protection Agency has determined that ambient air concentrations exceeded national ambient air quality standards for one or more criteria pollutants.

Nuclear Production: production operations for components of nuclear weapons that are not fabricated from plutonium, uranium, or other special materials. Raw material stock may include tritium.

NO_x: Refers to the oxides of nitrogen, primarily NO and NO₂. These are produced in the combustion of fossil fuels and can constitute an air pollution problem.

Outfall: The discharge point of a drain, sewer, or pipe as it empties into a body of water.

Ozone (O₃) The triatomic form of oxygen; in the stratosphere, ozone protects the earth from the sun's ultraviolet rays, but in lower levels of the atmosphere, ozone is considered an air pollutant.

pH: A measure of the hydrogen ion activity in an aqueous solution; specifically, the negative logarithm of the hydrogen ion concentration. Acidic solutions have a pH from 0 to 7; basic solutions have a pH greater than 7.

picocuries (pCi): One picocurie is equal to 1×10^{-12} curies.

Plume: The elongated pattern of contaminated air or water originating at a point-source, such as a smokestack or a hazardous waste disposal site.

Plutonium: A heavy, radioactive, metallic element with the atomic number 94. It is produced artificially in a reactor by bombardment of uranium and is used in the production of nuclear weapons.

Pyrotechnic: physical mixture of finely divided fuels and oxidizer powders which produce a rapid exothermic reaction when ignited
Radioisotopic Thermoelectric Generators (RTG): An electric generator using a thermocouple with the decaying heat of encapsulated plutonium-238 as its heat source.

Radioactive Waste: Materials from nuclear operations that are radioactive or are contaminated with radioactive materials, for which use, reuse, or recovery are impractical.

Radiological/Radionuclide: A radioactive element characterized according to its atomic mass and atomic number which can be man-made or naturally occurring. Radioisotopes can have a long life as soil or water pollutants, and are believed to have potentially mutagenic effects on the human body.

Rem: The unit of radiation dose for biological absorption: equal to the product of the absorbed dose in rads, a quality factor, and a distribution factor.

Resource Conservation Recovery Act: A "cradle to grave" regulatory program for hazardous waste which established, among other things, a system for managing hazardous waste from its generation to its ultimate disposal.

Retort: A container in which substances are distilled or decomposed by heat.

Risk: A term used to identify the combination of the likelihood (probability) and the consequence (severity) of an accident. Risk is typically quantified into the categories of low, medium, and high.

Sanitary Wastes: Any waste, liquid or solid (includes sludge), which is neither a RCRA regulated waste, a TSCA regulated waste, nor radioactive.

Scientific Notation: A form of numerical notation used to describe extremely high or extremely low values in a systematic manner. Scientific notation is written as the product of a factorial of ten and a base numerical value. For example, 5,000 is written as 5×10^4 , while 0.005 is written as 5×10^{-3} .

Sulfur Dioxide (SO₂): A heavy, pungent, colorless gas (formed in the combustion of coal), which is considered a major air pollutant.

Surplus: Any equipment, facility, building, or site that has no identified or planned programmatic use as determined by the program secretarial office currently administering the program.

Threshold limit values (TLV): The recommended concentration of airborne contaminants workers may be exposed to according to the American Council of Governmental Industrial Hygienists.

Tritium: A radioactive isotope of the element hydrogen with two neutrons and one proton. Common symbols for the isotope are H3 and T.

Transuranic (TRU) Waste: Waste contaminated with alpha-emitting radionuclides with half-lives greater than 20 years and concentrations greater than 100 nanocuries/gram at a time of assay. It is not a mixed waste.

Uranium: A heavy (atomic mass = 238.03) silvery-white metal with 14 radioactive isotopes. Uranium-235 is most commonly used as a fuel for nuclear fission. Another isotope, uranium-238, is transformed into fissionable plutonium-239 following its capture of a neutron in a nuclear reactor.

Water Quality Standard and Criteria: Concentration limit of constituents or characteristics allowed in water; often based on water use classifications (e.g. , drinking water, recreation use, propagation of fish and aquatic life, and agricultural and industrial use).

Wetland: Wetlands are defined by the Corps of Engineers and EPA as: "Areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (40 CFR 230.3 and 33 CFR 328.3)

Volatile Organic Compounds (VOC): A broad range of organic compounds, often halogenated, that vaporize at ambient or relatively low temperatures, such as benzene, chloroform, and methyl alcohol.

Appendix A

Lease Exhibit and Ohio EPA Concurrence Letter

[Figure \(Page app-1\)](#)

U.S. DEPARTMENT OF ENERGY GENERAL PURPOSE LEASE PART I

[Figure \(Page app-2\)](#)

U.S. DEPARTMENT OF ENERGY GENERAL PURPOSE LEASE PART I

[Figure \(Page app-3\)](#)

U.S. DEPARTMENT OF ENERGY GENERAL PURPOSE LEASE PART I

[Figure \(Page app-4\)](#)

U.S. DEPARTMENT OF ENERGY GENERAL PURPOSE LEASE PART I

[Figure \(Page app-1\)](#)

U.S. DEPARTMENT OF ENERGY GENERAL PURPOSE LEASE GENERAL PROVISION PART II

[Figure \(Page app-2\)](#)

U.S. DEPARTMENT OF ENERGY GENERAL PURPOSE LEASE GENERAL PROVISION PART II

[Figure \(Page app-3\)](#)

U.S. DEPARTMENT OF ENERGY GENERAL PURPOSE LEASE GENERAL PROVISION PART II

[Figure \(Page app-4\)](#)

U.S. DEPARTMENT OF ENERGY GENERAL PURPOSE LEASE GENERAL PROVISION PART II

[Figure \(Page app-5\)](#)

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U.S. DEPARTMENT OF ENERGY GENERAL PURPOSE LEASE GENERAL PROVISION PART II

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION 5 LETTER

Appendix B

Letters of Correspondence with Federal, State and Local Agencies

[Figure \(Page appb-1\)](#)

OHIO Department of Natural Resources Letter

[Figure \(Page appb-1\)](#)

Dayton Museum of Natural History Letter

[Figure \(Page appb-1\)](#)

Unites States Department of the Interio Fish and Wildlife Service Letter

[Figure \(Page appb-2\)](#)

Unites States Department of the Interio Fish and Wildlife Service Letter

[Figure \(Page appb-1\)](#)

OHIO Historic Preservation Office Letter

[Figure \(Page appb-1\)](#)

Unites States Department of the Interio Fish and Wildlife Service Letter

[Figure \(Page appb-1\)](#)

OHIO Department of Natural Resources Letter

Appendix C

NPDES Permit Requirements for the Mound Plant (1993)

Appendix C National Pollutant Discharge Elimination System Data (1993)

	No. of Samples	Annual Average (e)	Maximum Monthly Average Limit	NPDES Daily Average Permit Limit	NPDES Weekly Average Permit Limit	NPDES Monthly Average Permit
Outfall 5601 Parameters	(a)					
Flow Rate, MGD	198	0.08	0.10	n/a	n/a	n/a
pH, S.U.	101	7.7	7.9	6.5-9.0	n/a	n/a
Chlorine: total (b), mg/L	102	0.12	0.16	0.50	n/a	n/a
suspended solids, mg/L	26	1.9	4.5	n/a	30	15
Fecal colliform (b), n/100mL	6	25	83	n/a	2000	1000
Escherichia coli(b), n/100mL	25	48.5	270	n/a	n/a	n/a
Ammonia, mg/L as N	102	0.10	0.17	n/a	n/a	n/a
BOD (c), mg/L	4	1.7	2.6	n/a	15	10
Oil and Grease (d), mg/L	12	1.31	5.23	n/a	n/a	n/a
Cadmium, yg/L	12	<10	<10	n/a	n/a	n/a
Chromium, yg/L	12	<50	<50	n/a	n/a	n/a
Copper, yg/L	12	49.8	132	n/a	n/a	n/a

Nickel, yg/L	12	<50	<50	n/a	n/a	n/a
Lead, yg/L	12	13.6	57	n/a	n/a	n/a
Zinc, yg/L	12	60.7	115	n/a	n/a	n/a
Mercury(e), yg/L	12	<0.2	,0.2	n/a	n/a	n/a

Outfall 5602
Parameters

Flow Rate, MGD	(a)	0.19	0.36	n/a	n/a	
pH, S.U.	51	8.2	8.4	6.5-9.0	n/a	
Suspended solids (f), mg/L	51	6.9	12.8	45	n/a	30
COD(g), mg/L	51	95.2	182	n/a	n/a	n/n
Oil and grease, mg/L	12	0.75	7.6	10	n/a	n/n

Outfall 5603
Parameters

Flow Rate, MGD	(a)	4769	4769	n/a	n/a	n/n
pH, S.U.	24	7.9	8.1	6.5-9.0	n/a	n/n
Cyanide, mg/L	26	<0.1	,0.1	1.0	n/a	0.65
Cadmium, yg/L	24	<10	,10	100	n/a	n/a
Chromium, yg/L	24	<50	,50	500	n/a	n/a
Copper, yg/L	24	229	320	500	n/a	n/a
Nickel, yg/L	24	<50	<50	500	n/a	n/a
Zinc, yg/L	24	<50	<50	n/a	n/a	n/a
Total toxic organics(d), mg/L	4	<0.05	<0.05	2.13	n/a	n/a

Outfall 5002
Parameters

Flow Rate, MGD	(a)	0.48	0.70	n/a	n/a	n/a
pH, S.U.	51	8.3	8.6	6.5-9.0	n/a	n/a
Suspended solids, mg/L	51	13.5	19.6	45	n/a	30

Outfall 5001
Parameters

Flow Rate, MGD	(a)	0.25	0.42	n/a	n/a	n/a
pH, S.U.	27	8.1	8.4	6.5-9.0	n/a	n/a
Residual chlorine(b), mg/L	26	0.04	0.06	0.038(h)	n/a	n/a
Cyanide, mg/L	12	<0.01	,0.01	0.083	n/a	0.023
Pentachlorophenol, yg/L	12	<4	<4	n/a	n/a	n/a
Bis(2-ethylhexyl) phthalate, yg/L	12	26	232	n/a	n/a	
Cadmium, yg/L	51	1.9	,10	43	n/a	n/a
Chromium, yg/L	51	<50	,50	878	n/a	n/a
Copper, yg/L	51	44.5	93	120	n/a	546

Nickel, yg/L	51	<50	,50	1261	n/a	n/a
Lead, yg/L	51	<50	79	305	n/a	760
Zinc, yg/L	51	<50	76	n/a	n/a	191
Ceiodaphnia dubia						n/a
acute TU(i)	8	0.6	1.7	n/a	n/a	
chronic TU	4	1.3	1.3	n/a	n/a	
Pimephales promelas						
acute TU(i)	8	<0.1	0.4	n/a	n/a	n/a
chronic TU	4	0	0	n/a	n/a	n/a
Outfall 5801 Parameters						
% affected:						
Ceiodaphnia dubia						
48 hour acute TU(i)	12	2.9	10	n/a	n/a	n/a
Pimephales promelas						
96 hour acute TU(i)	12	2.5	17.5	n/a	n/a	n/a
Outfall 5901 Parameters						
% affected:						
Ceiodaphnia dubia						
48 hour acute TU(i)	12	19.2	1000	n/a	n/a	n/a
Pimephales promelas						
96 hour acute TU(i)	12	2.9	30	n/a	n/a	n/a
Outfall 5902 Parameters						
% affected:						
Ceiodaphnia dubia						
7 day chronic TU	4	5.0	10	n/a	n/a	n/a
Pimephales promelas						
7 day chronic TU	4	9.4	22.5	n/a	n/a	n/a

a continuous

b summer months only (May 1 through October 31)

c BOD = Biochemical oxygen demand

d Quarterly samples collected in March, June, August, and December

e biannual samples collected in June and December

f limits n/a when 0.25 inches of rain occur three days during the week

g COD - Chemical oxygen demand

h Limit not imposed until October 1, 1995

i TU = Toxicity unit

n/a = not applicable

Summary of Organic Compounds Detected in Mound Effluent in 1993
Concentration, yg/L

Outfall	Parameter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	MDL (a)
5601	chloroform	ND(b)	2.2	ND	ND	1
	bis(2-ethylhexyl)phthalate	ND	ND	ND	5c	4
	Napthalene	ND	ND	39	ND	4
	Trichloroethene	ND	ND	ND	1.6	1
5602	Bromoform	2.1	1.0	ND	ND	1
	Dibromochloromethane	1.9	ND	ND	ND	1
	bis(2-ethylhexyl)phthalate	ND	7.0	ND	ND	4
5603	Tetrachloroethene	ND	ND	ND	2.7	1
	Bromoform	5.0	2.0	5.8	1.3	1
	Dibromochloromethane	5.1	2.3	3.6	1.7	1
	bis(2-ethylhexyl)phthalate	ND	ND	ND	9.0	4
	Bromodichloromethane	2.1	1.0	ND	ND	1
	trichloroethene	ND	ND	ND	5.9	1
5002	bis(2-ethylhexyl)phthalate	5.0	ND	13	ND	4

a MDL = Method Detection Limit

b ND = None Detected

c This compound was present in the extraction blank at a concentration of 5 yg/L

Appendix D

Reference Tables from the Nonnuclear Consolidation Environmental Assessment

Indicators of Regional Growth at Mound Plant, 1970 - 2040

Local Region of Influence (ROI) 2040	1970	1980	1990	2000	2020
Civilian Labor Force 502,189	380,253	427,787	481,700	521,680	523,780
Unemployment Rate (%) 5.9	5.1	7.9	5.3	5.6	5.6
Personal Income (thousand \$) 33,139,543	3,802,566	9,141,306	16,594,092	22,344,200	27,930,592

----- Per Capita Income (\$/person) 30,048	14,132	9,821	16,947	22,146	25,772
----- Three County Population					
----- Butler County, OH 329,934	226,207	258,787	291,479	296,762	322,832
----- Middletown 52,094	48,767	43,719	46,022	46,856	50,972
----- Montgomery County, OH 645,480	606,148	571,697	573,809	595,964	635,941
----- Centerville 23,715	10,333	18,886	21,082	21,896	23,365
Dayton 204,782	242,917	203,741	182,044	189,073	201,756
Germantown 5,530	4,088	5,015	4,916	5,106	5,448
Kettering 68,134	71,864	61,186	60,596	62,908	67,127
Miamisburg 20,062	14,797	15,304	17,834	18,523	19,765
West Carrollton 16,202	10,748	13,148	14,404	14,959	15,963
----- Warren County, OH					
----- Carlisle 5,452	3,821	4,276	4,872	4,970	5,345
Franklin 12,339	10,075	10,711	11,026	11,249	12,097
----- ROI (County Total) 1,102,883	917,280	929,760	979,197	1,008,937	1,083,742

total employment includes only civilian employment. Personal Income and Per Capita Income are in current \$ for 1970-1990 and are in constant 1992 \$ for 2000-2040.

See Ref 1 for Sources

Mound Plant Alternative: Waste Management of Additional Hazardous/Toxic Waste

(a) Waste Stream	Disposal Method	Volume (ft3/year)
----- Acid Liquid Bulk	incineration/recovery	420
----- Alkaline	incineration/recovery	970
----- Oil/Coolants	incineration	1810
----- Halogenated and Non-Halogenated solvent	incineration	1550
----- Resin, Paint, Curing Agent, Adhesive and Rubber	incineration	70
----- Toluene Diisocyanate	incineration	40
----- Cyanide, Liquid	cyanide destruction	10

Mercury Contaminated Debris	landfilled	20
F006, F009 Sludge	landfilled	4200
Batteries (others)	recovery/landfilled	100
Classified Hazardous	declassified/landfilled	10
Acid Chromate Contaminated Debris	incineration	160
Cyanide Alkaline Contaminated Debris	incineration	100
Miscellaneous lab reagent/Off Spec. Product	incineration/landfilled	70
Non-Empty Aerosol Cans	incineration	590
Solvent/Oil Contaminated Debris and Miscellaneous	incineration	6960
Compressed Gas Cylinders	destruction/incineration	30
Total		18,620
a projected for 1995 workload		

Appendix E

Conformity Analysis Supporting Data and Calculations

Mobile Source Emission Factors and Estimate of Mobile Source Emissions From Implementation of Proposed Action

Emissions from passenger vehicles emission Factors from USEPA AP-42,, Fourth Edition Volume II, Appendix A VOC's (grams/mile)	0.41 grams/mile
Estimated Maximum Mound Plant Commuting Vehicle Population Accounting for Maximum Potential Jobs Generated from Implementation of the Proposed Action Proposed	Continuing Operations: 1,100 Additional Employees Due to 1,500 Total Commuting Commuting Vehicle 2,600
Population:	
Estimated Average Commute to the Mound Facility	30 miles/day
Estimated Mound Plant Commute (days/year) for Full Commuting Population	250
Estimated Mobile Source (indirect) Emissions (tons/year): (2,600 vehicles) x (30 miles/day) x (250 commutes/year) x (0.41 grams VOC's /mile) = 8.8	

Finding of No Significant Impact

Commercialization of The Mound Plant Miamisburg, Ohio

Proposed Action: On November 22, 1993, the U.S. Department of Energy decided to phase out operations at the Mound Plant in Miamisburg, Ohio, with the goal of releasing the site for commercial use. The goal of the Secretary of Energy's Economic Development Initiative is to make Departmental resources available to community partnerships for local business development that supports the President's broader objective of stimulating economic growth. To facilitate implementation of the Secretary's Economic Development Initiative, the Mound Reuse Committee (MRC) was formed. The MRC is the recognized Community Reuse Organization (CRO), and represents a broad cross-section of Mound Plant stakeholders, including the general public, local citizens action groups, State environmental regulatory personnel, local industries, the City of Miamisburg and Mound Plant employees. One objective of the MRC is to redirect the Mound Plant's advanced manufacturing capabilities for defense production to the private sector. The broad concept is to transform the plant into an advanced manufacturing center with the main focus on commercializing products, process development, and identifying other firms interested in commercializing products and other technology.

The Department proposes, therefore, to lease portions of the Mound Plant to commercial enterprises, excluding land associated with the south property. Leasing would be between the Department and a lessee including, but not limited to, Miamisburg Mound Community Improvement Corporation (MMCIC) as the distinct private entity to coordinate administrative function for the City of Miamisburg. The MMCIC would, in turn, administer its lease with the Department and sublet parcels of the Plant to other potential business enterprises for commercial uses consistent with the "Mound Plant Future Use Plan" and the environmental assessment for the proposed action. Although the MMCIC is a private entity which would act on behalf of the City of Miamisburg, it would operate within the confines of MRC recommendations. The MMCIC would also present any proposals from potential sublessees to the Department for approval before any subleases would take effect.

The Future Use Plan presents a combination of uses similar to ongoing activities, processes, and operations new to the Plant that would represent a governmental presence and a private industry technology partnership to enable the Plant to become a high technology, self-sustaining manufacturing mall with one or more anchor tenants that would attract other tenants to the facility. Potential operations could be similar to those analyzed in the Mound Plant Alternative described in the June 1993 Nonnuclear Consolidation Environmental Assessment, DOE/EA-0792. In addition to the ongoing activities at the Mound Plant, that alternative considered consolidation of the nonnuclear functions at the Plant from other Departmental sites to include: 1) nonnuclear electrical/mechanical manufacturing functions from the Kansas City, Pinellas, and Rocky Flats Plants, 2) lithium ambient batteries from Los Alamos National Laboratory, and 3) special products, such as nuclear grade steels, safe secure trailers, weapons trainer shop, and metrology capabilities from the Rocky Flats Plant. Leases or subleases for any uses not similar to those outlined above are outside the scope of the proposed action and would be subject to additional National Environmental Policy Act review before the Department's approval of the lease or sublease. Any new construction at the Plant (except for equipment and plant layout rearrangements, renovation activities, and other routine maintenance activities or replacements and upgrades consistent with facilitating the conversion to commercial use) would also be outside the scope of the proposed action and subject to additional National Environmental Policy Act review.

The Department has prepared an environmental assessment (DOE/EA-1001) that compares impacts of the proposed action with those of 1) not leasing the Plant to commercial enterprises (the "no action" alternative) and 2) limiting leasing activities strictly to non-DOE enterprises that are purely administrative or engage in essentially similar activities in scope and scale to those currently in existence at the Plant. The Department considered, but dismissed as unreasonable, the alternatives of 1) selling the Plant and all associated structures upon completion of environmental restoration activities, 2) demolishing the Plant and all associated structures upon completion of environmental restoration activities, and 3) continuing Departmental or other government-funded operations at the Plant. The first two alternatives were considered unreasonable because they would fail to provide sustained employment opportunities to the community and would result in restoration costs above those identified for the proposed action; the third alternative

was considered unreasonable because it would not be consistent with the Department's decision to consolidate and streamline operations as described in the Nonnuclear Consolidation Environmental Assessment and would not support commercialization of the Mound Plant.

Environmental Impacts: The proposed action would not impact the small wetland areas that are found on the facility grounds and would not impact the groundwater in terms of usage or potential contamination. A small portion of the south property falls within the 100 year flood plain of the Great Miami River, however, the south property is outside the scope of the environmental assessment. Therefore, no impact on the floodplain would result from the proposed action. The Mound Plant site does not contain any prime or unique farmlands, and no archaeological sites eligible for the National Register would be affected by the proposed action. Based on the analysis in the environmental assessment, the proposed action would not result in any substantive change in level of service for transportation links or in noise levels in the area of the Plant. Racial minority and low income families do reside in the Miamisburg community, however, Miamisburg is not a racial minority or low income community. The proposed action and alternatives will, therefore, not have any unique affects on these groups.

Cumulative air impacts from tenant emissions would not exceed the Threshold Limit Values (TLV) for Hazardous Air Pollutants (HAP), both in combination or for any single pollutant, as defined in the Clean Air Act, Section 112 and the Ohio Administrative Code 3745-77-01(w). Emissions of specific chemicals used in new processes may increase current emission levels for those chemicals, but increases would not be allowed to exceed applicable State regulatory standards or permitted limits through lease conditions. No net increases in radiological air emissions over existing emissions would be anticipated from the proposed action. Total radiological air emissions from the Plant in 1993 included 664 curies of tritium, 1.2×10^{-5} curies of plutonium-238, 4.0×10^{-8} curies of plutonium-239, 6.3×10^{-8} curies of uranium-233,234 and 5.7×10^{-8} curies of uranium-238. The Maximum Effective Dose Equivalent (EDE) to individuals in the population was 0.04 mrem for radioactive airborne releases. Therefore, Mound's radiological air emissions in 1993 represented 0.4% of the Environmental Protection Agency (EPA) dose standard of 10 mrem. All leases and subleases would contain restrictive lease conditions to ensure no new radionuclides would be introduced to the site and that potential tenants' air impacts would not exceed the baseline estimates provided in the environmental assessment.

Under conditions of the lease, nonradiological effluent discharges from the proposed action would be limited to levels currently permitted under the discharge standards, as established by the Mound Plant's National Pollutant Discharge Elimination System (NPDES) permit. If the proposed processes are substantially different than ongoing operations, the current wastewater permit may require modification. However, impacts would be not greater than increased stormwater runoff of up to 132 million gallons per year of additional wastewater as stated in the Nonnuclear Consolidation Environmental Assessment. Release levels of radiological liquid effluents would remain at or below current levels (2.5×10^{-4} curies of plutonium-238, 3.4 curies of tritium, 3.5×10^{-4} curies of uranium-233,234 and 8.9×10^{-6} curies of plutonium-239 in 1993). All leases and subleases would contain restrictive lease conditions to ensure compliance with regulatory requirements and to ensure that the proposed uses are within the bounds of the environmental assessment.

Commercial enterprises that lease space at the Plant would be bound through lease agreements to conduct their waste management operations independent of Mound's Hazardous Waste Operating Permit, however, an effort would be made to bring in processes with wastestreams that are compatible with the current permit. Regardless, tenant operations would not exceed the total volumes of waste generated at Mound shown in Table 3-6 of the environmental assessment. The proposed action would allow for employment at the facility of up to 1,500 workers in addition to the anticipated 1,100 workers for ongoing operations associated with environmental restoration and Nuclear Energy Radioisotopic Thermoelectric Generator (RTG) missions.

Environmental impacts from the no action alternative would be limited to those from ongoing environmental restoration activities and Nuclear Energy RTG missions. The no action alternative would retain 900 workers for environmental restoration and 200 workers for ongoing RTG missions at the Plant.

The alternative of limiting leasing activities strictly to non-DOE enterprises which are purely administrative or engage in essentially similar activities in scope and scale to those currently in existence at the Plant would not introduce any new environmental impacts from the established Mound Plant baseline. This alternative would generate an additional 200 workers at the

Plant.

For further information contact: For further information on the proposed action (including a copy of the environmental assessment) or the National Environmental Policy Act review program concerning proposals at the Mound Plant, please contact:

Sue Smiley, NEPA Compliance Officer
Ohio Field Office
U.S. Department of Energy
P.O. Box 3020
Miamisburg, Ohio 45343-3020
(513) 865-3987

For general information on the Department's National Environmental Policy Act process, please contact:

Carol M. Borgstrom, Director
Office of NEPA Oversight, EH-25
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585
(202)586-4600 or (800)472-2756

Finding: Based on the analysis of impacts in the environmental assessment, the proposed action to lease all or portions of the Mound Plant to commercial enterprises for sublease to other potential business enterprises for commercial uses consistent with the "Mound Plant Future Use Plan" and the environmental assessment for the proposed action would not significantly affect the quality of the human environment within the meaning of the National Environmental Policy Act, 42 U.S.C. 4321, et seq. Therefore, the Department is issuing this finding of no significant impact and an environmental impact statement is not required.

Signed in Miamisburg, Ohio this 27th day of October, 1994.

J. Phil Hamric
Manager, Ohio Field Office

CONCURRENCE

on

FINDING OF NO SIGNIFICANT IMPACT
COMMERCIALIZATION OF THE MOUND PLANT
MIAMISBURG, OHIO

Sue Smiley, NEPA Compliance Officer

Date

Nat Brown, Assistant Manager, Compliance Support

Date

John Alan Jones, Counsel

Date

